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The Instrumental Dilatation of the Cervix and Orifice of the Womb during Pregnancy and Labour.*

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(Translated from the French by Prof. R. Mobbs, of Geneva.)

IT may sometimes be an advantage both to mother and child to bring labour to a speedy termination when dilatation is not yet complete or even to interrupt labour by sure and rapid means when the mother runs any risk that can only be averted by recourse to so extreme a measure. In all ages medical practitioners have sought for fit processes and methods for the accomplishment of this purpose. The means employed up to the present may be grouped under two important categories—(1) those the aim of which is to provoke labour, such as the Krause bougie, the Kiwisch shower-bath, the bags of Barnes, Fehling, Garriel and Champetier de Ribes, Tarnier's dilator, Braune's colpeurynter, etc., etc.—these are slow methods; (2) those which are used for the purpose of rendering the uterine cavity accessible, in the shortest time possible, to the operations necessary for the immediate extraction of the fœtus. These are rapid, and amongst them must be classed the processes of instrumental or manual dilatation, deep incisions in the cervix uteri and the "cesaricum vaginale."

At the International Medical Congress, held in Berlin in 1890, Professor Bossi, of Genoa, described an original method by which forced labour could be brought about within a fixed time. In cases

* Read before the Geneva Medical Association, 3rd February, 1904.

of necessity it was possible, by this method, to obtain complete dilatation even in ten minutes; the surgeon was absolute master of the situation, and could always extract the fœtus in the lapse of time necessary in a given case. This end was obtained by means of a special instrument tested with success in a certain number of cases, and which has been modified and perfected in such a way as to render it less dangerous. The construction of the instrument is, of course, generally known.

Practitioners everywhere admit the immense importance of this new method, but though it has already produced such excellent results and deserves the most serious consideration, it is still evident that the instrument itself is not yet perfect, and already a number of more or less happy modifications have been suggested. The efforts of inventors have been directed towards three principal improvements:—

1. It was necessary, first of all, to give to the instrument a true pelvic curvature.

2. It was necessary to simplify the instrument, to make it lighter and more easily susceptible of disinfection.

3. It was necessary to enlarge the surface of the blades or increase the number of acting points in order to prevent the risk of rents, always possible.

Of all the models proposed I shall only mention those of Raineri, Nowakowski, Kaiser and Frommer, but there are many others. All of them convey to us the idea of man's marvellous faculty of invention, but not one has as yet solved the problem in a satisfactory way, and all are in every respect inferior to Bossi's invention itself. Indeed, this is no matter for surprise when we consider that it was only after fifteen years of assiduous study and ever-renewed experiment that Bossi succeeded in producing the model in question. The most important improvements called for are the first and last—(*a*) As a matter of fact Bossi's dilator does not possess a properly called pelvic curvature; (*b*) the acting surface of the blades is certainly too small, thus incurring the danger of more or less considerable cervical rents. Let us examine these two points:—

Firstly, what are we to understand by a pelvic curvature in an instrument such as that we have under study? The direction of the cervix of a pregnant uterus on the point of delivery being perpendicular or about on the plane of the inlet of the true pelvis, it is not enough to give the instrument a more or less pronounced antero-concave curvature to make of it a pelvic curvature in the obstetrical sense of the word. This will only be really obtained when

the plane, in which the extremities of the blades of the instrument move, is found to be absolutely parallel with the plane of the inlet of the true pelvis, and consequently parallel with the plane of dilatation of the uterine orifice. Then only will it be possible to effect the opening desired without any dislocation and at the very point where the physiological dilatation takes place. But neither does Bossi's instrument nor any of its numerous modified forms fulfil this condition. Indeed, a glance is enough to see that even when the handle is greatly lowered, which in certain cases, such as primiparæ, can only be done with great difficulty, it is absolutely impossible to bring the circle of the opening into a plane even approximately parallel with that of the inlet of the true pelvis. In spite of the willingness of the operator, these two planes always form a greater or lesser angle at the posterior opening, and it is not difficult to see that this defect is inherent in the mechanism of the instrument itself. All the improved models of Bossi's dilator are constructed on the original plan, without the constructors having been able to deviate from it in any way whatever, and it is to this lack of a pelvic curvature that must certainly be attributed the greatest number of rents made during the use of the instrument. The blades occupy a position altogether out of keeping with the plane of the opening of the uterine orifice, and the result is that no dilatation is possible without producing dislocation and *excessive tension* highly prejudicial to the integrity of the orifice.

Secondly, with the instrument as it is actually constructed, it is hardly possible during the progress of dilatation to make use of larger and larger protecting caps, because then, owing to the size of the dilator, its introduction becomes quite impossible. An attempt has been made to remedy this defect, firstly, by simply doubling the number of blades, as in the Kaiser and Frommer dilators and others of the same kind; or, secondly, by attaching to the extremities of the instrument—as in the Nowakowski model—a sort of table-napkin ring which expands progressively and continuously, so that during the whole dilatation period the uterine orifice is always and in every part in permanent contact with the instrument. But Kaiser and Frommer have quite overloked the fact that an increase in the number of points of contact is by no means the same thing as an enlargement of the surface of application, and a recent article by Bardeleben[1] has clearly shown how dangerous is such a modification. As to the Nowakowski dilator, the idea is evidently

1. *Bardeleben.* Wesen und Erfolg der schnellen mechanisch-instrumentellen Muttermundserweiterung in der Geburtshülfe, *Arch. f. Gynaekologie*, Bd. 70, p. 1.

ingenious, but it may reasonably be asked whether in cases in which under the influence of labour pains the head is caught in the inside of the napkin ring, it would be an easy task to withdraw the instrument without inflicting rents.

The problem to be solved is all the more important, seeing that—even if with the use of the present instruments complete dilatation is possible without the infliction of rents in the orifice—it is no slight matter to have obtained it with blades, say, of half an inch or an inch in width. As a matter of fact when the indicator registers four inches the dilatation really obtained will not be equal to a circle of four inches in diameter. After the operation the orifice, contracting by itself, can only correspond to a circle tangent to the points of the uterine orifice, just in the middle between two blades, and it is easy to see that it will be all the larger according to the width of the blades. This is very important, for in a necessarily incomplete dilatation rents may easily be inflicted at the time of consecutive intervention.

Although for a long time I had been conversant with Bossi's works, it was the incontestable authority of my honoured master, Professor Leopold, that led me to study the question more thoroughly. And, first of all, I asked myself whether the failure of others was not due to the two defects already referred to, and whether by rectifying these the method employed by Bossi in special cases could not be more largely applied than is at present supposed. On perusing the works of Bossi and his pupils and the more recent contributions of Leopold, Keller, Lederer, Knapp and others it is impossible not to feel that, if from this time we are really in possession of a method by which the period of dilatation can be shortened, one of the most important steps has been taken in the progress of obstetrical science since the invention of forceps and the use of chloroform. But should the method be reserved only for cases of eclampsia, of gravido-cardiac accidents, of phthisis, pyelitis, etc? Might it not be more generally applied, on condition, of course, that its use is rendered less uncertain and more available to the practitioner?

Having realised the impossibility of attaining this end by simply modifying Bossi's instrument, I soon became convinced that the problem could only be solved by the construction of an altogether new dilator, the mechanism of which should be entirely different. I put myself in communication with Mr. C. F. Hausmann, the director of the well-known surgical instrument manufactory at St. Gall, and was fortunate enough to awaken his interest and to

convince him of the importance of constructing a new instrument responding as far as possible to all the theoretic exigencies that could be formulated. These, which I explained to him, are as follows:—

1. The dilatation produced by the instrument should be effected as near as possible in a direction parallel to the plane of the inlet of the true pelvis in order that there may be no appreciable dislocation of the cervix or of the uterine orifice.

2. The instrument should respond to all the exigencies of modern surgery. Its reparation and sterilisation should be easy and simple.

3. It should be possible to modify the width of the blades, at will, during the operation and according to the degree of dilatation.

Owing to the extreme kindness of Mr. Hausmann, who spared neither time nor money in order to arrive at a satisfactory result, I am to-day in a position to bring before the notice of my co-practitioners a *new dilator* which is in a very real sense superior to all others, and which, I trust, will contribute to the introduction into the daily practice of attendance upon labour the mechanical method of the dilatation of the cervix uteri.

As will be seen by the accompanying illustrations, my dilator is composed of an elongated handle containing a screw on which two sliding nuts turn inversely, and of four movable blades the extremities of which are turned up. The handle can be easily taken to pieces so as to be perfectly cleaned, and all the blades move in a plane parallel to the longitudinal axis of the instrument, which is so constructed that larger or smaller blades can be adapted to the handle in case of need. The posterior blade and the two lateral blades are furnished with a small spur in order to prevent them from slipping when inside the uterus. The extremities of the dilating blades all spread out equally from the same central point, and form during the operation a circle, the plane of which is parallel to the longitudinal axis of the instrument. The most important advantages of my new dilator are:—

1. It is possible to adapt to the same handle, according to the progress of dilatation, a succession of blades of wider and wider surface in such a way as to reduce to a minimum the risk of rents.

2. Owing to the fact that the dilatation is effected in a plane parallel to the axis of the instrument, it follows that my dilator presents in reality a pelvic curvature in the proper obstetrical sense of the word, it being possible to bring the dilating part of the instrument without the slightest difficulty into the plane of the inlet of the true pelvis, the uterine orifice undergoing no dislocation thereby.

3. The instrument is constructed in such a way that each of the blades can be introduced separately like the branches of a forceps and can be fixed to the handle when they are in perfect position. This permits the utilisation of much larger blades than those which are employed in the Bossi dilator and other instruments of the same kind. [I have a series of blades for my own use, varying from 0·6cm., 1·2cm., 2·4cm. to 3·6cm. in width.]

4. As soon as dilatation has been set up the blades can be withdrawn one after the other, thus preventing the danger arising from not being able easily to withdraw the instrument on account of the descent of the head during the operation.

The dilator constructed, the next thing was to test it by experiments. Dr. Aeppli, director of the Lying-in Hospital at St. Gall, at once, and with a kindness for which I cannot be too grateful, put the Hospital at my disposal, and during a short stay at St. Gall I was able to make my first experiments on four gravid women and three parturients. In none of these seven cases did I operatively terminate labour. The method was new; I hesitated a little, and as a matter of fact all I had in view just then was to assure myself that I was on the right track, that my instrument was capable of sufficiently dilating the cervix uteri without difficulty and without causing rents, in order that in cases of necessity labour might be terminated at once by any intervention (forceps, version or cephalotripsy). These seven cases have just been dealt with at length in a contribution to the *Archiv für Gynäkologie*.[1] I shall here give only a brief account of them:—

Case 1. III-para, 33 years. Pregnancy at term. Cervix 1cm long. No pains. Head movable. Dilatation to a degree of 8cm. in half an hour, without narcosis and without pain. No hæmorrhage. Natural labour seven hours later. No fever.

Case 2. Multipara. Pregnancy at term. Cervix ½cm. No pains. Dilatation in half an hour, without narcosis, without pain and without the least hæmorrhage. Natural labour three days after.

Case 3. I-para. Parturient. Obliterated cervix. Orifice a little larger than a 2-franc piece. Dilatation to 8¾cm., without narcosis, in 20 minutes. Dilatation interrupted on account of a slight loss of blood. Natural labour six hours later. The speculum examination after the expulsion of placenta revealed a small rent which did not bleed and which there was no necessity to stitch. No fever.

Case 4. I-para. Parturient. Cervix 1cm. long. Orifice allowed of

1. *de Seigneux.* Beitrag zur mechanischen Erweiterung des Cervicalcanales und des Muttermundes während der Schwangerschaft und der Geburt. *Arch. f. Gyn.*, Bd. 70, p. 614.

introduction of a finger. Dilatation to 6½cm. in half an hour and without narcosis. Prolapse of umbilical cord and of a hand was then observed. Braxton-Hicks' combined version after several fruitless attempts at reduction. Extraction four hours later. Child asphyctic, could not be saved.

Case 5. II-para. Pregnancy at term; 2½ per cent. of albumen. Cervix 3cm. long. Dilatation to 9cm., without pains and without narcosis, in an hour. Labour set in from commencement of dilatation. Natural delivery 5½ hours later.

Case 6. I-para. Pregnancy at term. Cervix 3cm. in length. Dilatation to 10cm. in an hour and a quarter. Natural delivery following day.

Case 7. III-para. Parturient. Obliterated cervix. Orifice size of a shilling. Dilatation to 10cm. in 50 minutes. Natural labour two hours later.

The slight rent referred to in the third case was evidently due to the fact that I was not then in possession of blades as large as those I now employ. As to the fourth case, I wish to state that this was not operated on by me, but by the hospital assistant. It is clear that dilatation should not have been stopped at 6½cm., nor should Braxton-Hicks' version have been applied, but, seeing the impossibility of reducing the umbilical cord, it was precisely a case for continuing the dilatation till it was possible to introduce the whole hand and perform internal version, followed by the immediate extraction of the fœtus had that been necessary. Then the child would probably have been saved.

These tentative and encouraging experiments led me to modify my instrument in certain details and to continue to test its efficiency. A short time after, during a second visit to St. Gall, I had the opportunity of testing it in three new cases in which dilatation was followed by an easy application of the forceps. They were as follows:—

Case 8. (Unpublished.) III-para; 32 years. Labour pains set in at 6 p.m. on July 24th. Head in the inlet of the true pelvis, slightly movable. At 10-30 obliterated cervix, orifice size of a 2-franc piece. Chloroform—narcosis. Introduction of the dilator which was at once opened to 5cm. The edges of the uterine orifice stiffened at this time. Every quarter of a minute I gave the screw a quarter of a turn, proceeding slowly and with the utmost prudence; from 7cm. I dropped to a quarter of a turn each half minute, and from 9cm. reduced even this to a quarter of a turn every 45 seconds, thus obtaining in about half an hour a dilatation of 11cm. without having produced the least hæmorrhage. Wishing to bring labour to a speedy termination, I applied the forceps

and slowly extracted a child of 2500gr. and 47cm. in length, that presented the following dimensions:—

Circ. FO = 34 cm.	Diam. FO = 11 cm.
B.P = 30 cm.	SOBr = 8½ cm.
	BP = 9 cm.
	BF = 8 cm.
	MO = 13 cm.

At the time of the two preceding births there had been pretty violent post-partum hæmorrhage resulting from adherence of the placenta. After half an hour I tried to expel the placenta by the Credé process. This was followed by a considerable loss of blood which could only be stopped by manual delivery. The placenta was very adherent, and hæmorrhage ceased from the moment of its extraction. Convalescence was normal, with the exception of a slight elevation of temperature the second and third days which necessitated an intra-uterine injection of lysol. Then all went well, and mother and child left the hospital in excellent condition on the 12th day.

Case 9. (Unpublished.) III-para; 27 years. Entered the hospital on August 2nd, 1903, at 10-30 p.m. Labour had set in. Obliterated cervix; orifice size of a 2-franc piece. Water-bag still intact. Sagittal suture in the transverse diameter. Small fontanelle to left; large fontanelle to right. The pains being very slight and only occasional, I introduced the dilator without narcosis, and proceeded with the dilatation exactly in the same way as in the preceding case. The operation produced neither pain nor hæmorrhage. When the dilatation had attained 11cm. I still left the instrument in position for three full minutes and then withdrew it. At this juncture I observed that the orifice had fallen in upon itself, but that it was easy with the finger to push back the sides of it to the walls of the pelvis. The sagittal suture still remaining in the transverse diameter, the two fontanelles at the same height, I decided to break the water-bag, and asked the patient to push with all her might. The head then descended a little, and the sagittal suture fell into the left oblique diameter. Application of forceps was easy, and with chloroform a child of 52cm. and 3130gr, was extracted. After half an hour expression of placenta by Credé's method. A slight atonic hæmorrhage was easily stopped by massage of the uterus and an injection of ergotin. Suture of a small rent in the perineum with two stitches. Convalescence normal. Mother and child left the clinic in excellent health on the 12th day.

Case 10. (Unpublished.) II-para; 28 years. Entered the hospital on July 28th, 1903, at 8 p.m. Spontaneous rupture of water-bag, and during the whole night slight pains. On the 29th, at 11 p.m., a second position was observed. The head was movable above the inlet of the true pelvis. The cervix was not yet obliterated and measured about 1cm. in length. The uterine orifice was very far back, and its edges were very thick.

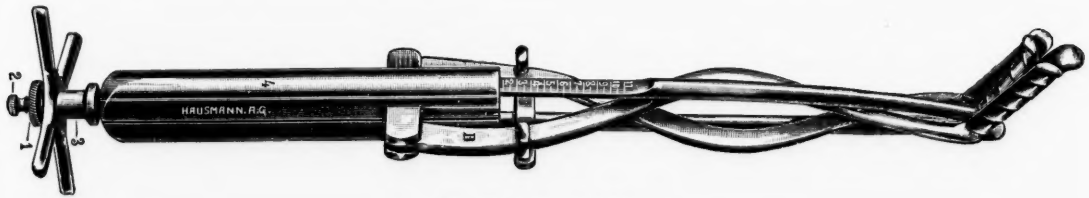

Fig. 1.—Closed Dilator.

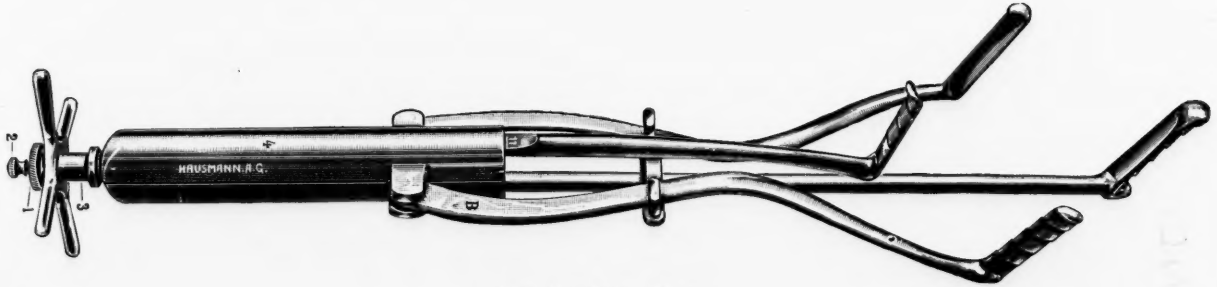

Fig. 2.—Open Dilator.

Fig. 3.—Assortment of the four series of Blades (natural size).

The cervical canal gave easy access to two fingers. Pains were slight, occurring about every ten minutes. The cervix not yet being obliterated, the head still above the inlet of the true pelvis, and an application of the forceps after dilatation seeming to be difficult, I gave up for the moment all idea of intervention. At 2 p.m. same condition; slight pains. At 5 p.m. pains more acute, every five minutes. Obliterated cervix Orifice size of a five-shilling piece. Head engaged in cervix. Introduced dilator, the blades of which could at once be opened to 7cm. The tension of the edges of the orifice being very great, I operated with the utmost prudence and gave the screw of my instrument only a quarter of a turn every minute. From time to time I waited for two full minutes before continuing the dilatation. I went on, thus attaining in 35 minutes 11cm. without the least hæmorrhage. At that moment I had chloroform given. Application of Tarnier forceps, and easy extraction of a living child. Expulsion of placenta by Credé's method three-quarters of an hour after delivery. No hæmorrhage. Mother and child left the hospital in good health on the 12th day.

May I be allowed to repeat here some very important recommendations included in my first article?

Firstly, my dilator ought not, without a clearly defined indication, to be used in the case of a woman not in labour, and I only regard as such an indication all those conditions which place the mother in a position in which she runs any risk and which imperatively call for interruption of pregnancy and the speedy evacuation of the uterus. In all these cases dilatation should be followed by the immediate extraction of the fœtus.

As to the regular employment of this method for the purpose of provoking premature labour, this is a question which still remains to be studied. It is quite possible, I may add even probable, that it will in time completely replace the habitual employment of the Krause bougies. It was in this way that at the Dresden Gynæcological Clinic my honoured master, Prof. Leopold, to whom I presented my instrument last autumn, utilised it in two cases, which will be dealt with in detail in a future publication. One of the two was that of an eclamptic who was brought to the clinic in a state of complete coma. The cervix uteri was intact, the woman having as yet no labour pains and the orifice being completely closed. It was possible to dilate it very rapidly without the least hæmorrhage and in a manner sufficient to permit of the perforation of the child, already dead, and its extraction afterwards. The operation did not last more than an hour at most. In the second case it was a question of narrow pelvis. Prof. Leopold decided to provoke premature labour by means of my dilator. The cervix was intact,

very long, the orifice completely closed. Within 30 to 40 minutes it was possible to dilate it to 5½cm. without any loss of blood, without the slightest pain and without narcosis. A bag was then easily introduced and labour set in a few hours later.

Secondly, except in these urgent cases the method should only be used when the cervix is quite obliterated and the dilatation of the external orifice has already begun. In this way the eventual danger of rents is avoided, rents all the more serious that the cervix is less obliterated, for it ought never to be forgotten that no metallic dilator has succeeded up to the present in producing the obliteration of the cervix and the orifice. All dilators produce only the lateral distension of the edges of the orifice and the obliteration of the cervix uteri can only be effected by the contraction of the uterus.

Thirdly, in cases in which the dilatation has only been brought about for the purpose of shortening the first stage, it is not at all necessary to bring labour to an end by an operation. This may be very well left to nature, as is evident from the following two cases which I recently had occasion to treat:—

Case 11. (Unpublished.) IV-para; 25 years. The three preceding confinements normal. January 16th, 1904, at 1 p.m., spontaneous rupture of water-bag. Labour pains did not set in till 4 p.m. They occurred at first with regularity every five minutes, but diminished in frequency and in acuteness during the evening, to return in full force about 11 o'clock. The following day, at 4 a.m., the midwife called me in. The cervix uteri was obliterated, and the orifice was a little larger than half a crown. The child seemed small with head engaged. No water-bag. As at 6 o'clock pains had not yet returned, and it seemed that labour would last a long time, I decided to use my dilator. The dilatation being sufficient, I at once used blades of 2½ cm. in width, which I introduced separately like the branches of a forceps, and which I fixed one after the other to the handle of the instrument, this succeeding admirably. I then turned the screw without stopping till tension of the edges of the orifice was produced. The indicator marked 5cm. From that point I only gave a quarter of a turn per minute, constantly controlling the degree of tension of the orifice. During this time and probably under the direct influence of these manipulations, uterine activity little by little reappeared. The pains, at first slight and occasional, returned at shorter intervals and with increasing violence. By the time the dilatation had attained 8¾cm. they became expulsive. In spite of that I distended my instrument to 10cm. and observed the descent of the head between the blades, which I drew out one after the other at 7-15 p.m. This was followed by two strong expulsive pains sufficient to expel the child—a child 44cm. long and 2100gr. weight. Natural delivery took place

without any hæmorrhage, and speculum examination revealed no rent. No fever.

Case 12. (Unpublished.) III-para; 37 years. Labour pains began January 22nd, 1904, at 8 a.m. I was called in in the evening at 7 o'clock. On arriving I found the cervix obliterated, a dilatation as large as a florin and the water-bag ruptured. In an hour I succeeded in producing, without any lesion, complete dilatation, and the child, a small one, was expelled naturally by four or five expulsive pains.

And now what conclusions may be reasonably drawn from this first series of experiments? It is evident that I cannot, and indeed have no wish to pronounce, in spite of these very encouraging results, a definite judgment on the method itself. The only fact to be borne in mind is that in any case the use of my dilator permits of obtaining, without narcosis, without pain and without danger, a dilatation sufficient for the delivery of a living child. If the method be considered without *parti pris* such a result cannot be regarded otherwise than an indisputable progress in obstetrical practice. But undoubtedly it is to Bossi that the merit is due of having demonstrated for the first time the possibility of the rapid dilatation of the cervix uteri or the orifice at every period of pregnancy or labour. May I be allowed to hope that I have succeeded in preventing certain dangers and inconveniences of his dilator, and thus have contributed to the generalisation of a method which in certain special cases may save so many mothers.

Who at the present hour shall predict the services which, in the future, may be rendered in this domain by the Bossi method? Is it not our first duty thoroughly to examine a new method which has in view the well-being of those confided to our care? We cannot stop at theoretical considerations. It is experimenting alone which must decide whether the mechanical method of the dilatation of the cervix uteri is really without danger, whether it can be applied in all cases, and if not, in which cases; in a word, to determine all the pro and con indications and seeing the importance of the matter the attempt is eminently justifiable.

It is at least a worthy thing that all who are connected with university clinics should interest themselves in this matter in order to arrive at a definite judgment with regard to the method itself, calling to mind the admirable words with which Bumm,[1] in his recent work, concludes the first chapter devoted to a brief historical review of the development of obstetrics:—"Our science, like that of every other branch of medical practice, is still far from the perfection of

1. Bumm. Grundriss sum Studium der Geburtshülfe, 1903.

its development. After periods of repose and reflections during which we were content to enter into and more fully possess the heritage slowly acquired, we come into position of new methods which always enlarge our horizon. May our descendants, moved with regard to us by the same sentiment with which we are moved in considering the immense work accomplished by our predecessors, be able to say that we too were really worthy of them, that we, too, left some small trace on the path of progress."

As will be seen in the above article, I was led by force of circumstances to employ my dilator in absolutely normal cases, without any special indication. This is easily explained by the fact that eclamptic cases and others are not in reality so frequent as may be supposed even in hospitals, and I should have been obliged to wait too long before being able to test my dilator which could only be done by application in a sufficient number of cases.

From the experiments I have made with my dilator up to the present, and while awaiting still further tests of its efficiency, I may describe my results as follows:—

(*a*) My dilator renders the immediate termination of labour possible, with or without narcosis, when the orifice is not yet sufficiently dilated to admit of obstetrical intervention, and when the state of mother or child calls for immediate delivery.

(*b*) It also renders equally possible a rapid termination of labour in all cases in which the life of the mother is in any danger on account of pregnancy, and where this risk can only be avoided by the extraction of the child at a time when the cervix is still intact.

As to the systematic application of the method in cases of parturients in whom dilatation does not take place in spite of violent pains, or in other cases in which, as the result of complete inertia of the uterus, a woman may remain for several days without any apparent progress in the dilatation of the cervix, I desire to state that I consider this question as one as yet far from being settled, notwithstanding the very encouraging results I have obtained up to the present. At the same time I regard it as a question which certainly deserves the most serious consideration and impartial study on the part of specialists.

On Sacs containing Fœtuses and lying free in the Peritoneal Cavity of a Rabbit.*

By M. S. Pembrey, M.A., M.D., *Lecturer on Physiology;* and G. Bellingham Smith, M.B., B.S., *Assistant Obstetric Physician, Guy's Hospital.*

In connection with the subject of extra-uterine pregnancy considerable interest must be attached to the fœtal sacs which have been found by various observers in the peritoneal cavity of domestic animals. Many of these cases have been recorded as extra-uterine gestation, either primary or abdominal; others have been attributed to extrusion of the fœtal sacs after rupture of the uterus. Bland Sutton has maintained that the latter view explains nearly all the cases of extra-uterine gestation in animals, and in this he is supported by the recent work of Kamann.

In the case, which is now recorded, the animal had completely recovered from the peritonitis, which had apparently followed the rupture of the uterus and the escape of the fœtal sacs into the peritoneal cavity.

Description of Case. A pregnant rabbit was bought for breeding in October, 1897, and between that time and June, 1898, produced four normal litters. It was noticed that the abdomen appeared to be somewhat distended after the casting of a litter. On that account and because she neglected or devoured her young she was killed within a week of the last littering. Before the abdomen was opened palpation revealed two or three discoidal bodies, which were freely moveable in the peritoneal cavity. When the abdomen was explored, five white discoidal bodies, 7 or 8cm. in length, 4 or 5cm. in width, and 2cm. in thickness, were found together with a few small pieces of a compact white substance. None of these bodies showed any attachment to the abdominal organs or to the peritoneum; in all but the smallest sac the head, body, and limbs of a fœtus could be felt.

In order that a thorough examination of the viscera might be made, another doe rabbit of similar size, 53cm. long, was killed and dissected side by side as a control.

Examination of Thorax and Abdomen. There was no sign of

* Read at a meeting of the Obstetrical Society of London, July 6th, 1904. The specimens referred to were exhibited at a meeting of the Society on July 6th, 1898. *Vide* Trans. Obstet. Soc. London. Vol xl. 1898. p, 253.

pleurisy; the only abnormality in the chest appeared to be some small patches of lymph "* over the left and right ventricles of the heart. The parietal and visceral peritoneum were carefully examined. The under surface of the diaphragm showed no signs of adhesions nor were any observed between the intestines and the abdominal wall. There were, however, well-marked adhesions between the coils of the cæcum, and here in addition to flakes of lymph was found a small cyst, which was 0·5cm. in diameter and contained a brownish fluid. The parietal peritoneum of the left and especially of the right flank showed numerous small projections of "lymph"; in the hypogastric region these were most marked and attained a length of half a centimetre. These flakes are deposits of fibrinous exudation and not the remains of ingrowths into, or of outgrowths from, the abdominal wall; stripping up the peritoneum shows that the flakes are only attached to the free surface and microscopic examination revealed no sign of placental tissue. In the case of the stomach and spleen nothing abnormal was noted, except that the latter organ was double the size of the spleen in the control rabbit. The free margins of the liver were rough and thickened and in two places were attached by adhesions to the omentum.

Generative Organs. The ovaries and Fallopian tubes were normal in appearance; there were no adhesions and the fimbriated extremities were patent and showed no signs of inflammation. The broad ligaments were thickened and in places showed patches of lymph; these flakes were numerous upon the two horns of the uterus and upon the posterior surface of the right horn about 6cm. from its opening into the vagina was a projection of lymph $1 \times 0{\cdot}5$cm. The two horns were slit open and examined throughout their length; no scar or sign of rupture could be seen. The projection of lymph was at first considered to be the probable site of a rupture; that portion, therefore, of the right horn of the uterus, to which the lymph was attached, was excised and examined by means of microscopic sections. No signs of scar-tissue could be found.

A further examination of the uterus, however, was more successful. On the front of the uterus just below the external junction of the two cornua was found a ridge of tissue lying nearly horizontally and resembling in appearance a scar. It started as a thickened elevation on the left horn and became thinner as it stretched across the right horn. It is 2·5cm. long, lies about 1·5cm. above the openings of the two horns into the vagina and is confined

* The term "lymph" is used to indicate fibrinous exudation.

chiefly to the right horn. Microscopic examination of the bulbous portion of the ridge showed well-marked fibrous tissue. No such ridge could be seen in the normal uteri of the other rabbits which were examined.

General Description of the Fœtal Sacs. The five sacs are flattened ovoid bodies with a smooth white surface; the remains of the placenta can, in four of the specimens, be easily felt under the surface; the placental tissue is covered by a continuation of the smooth opaque membrane which encloses the fœtus. In each case the sac is apparently composed of the fœtal membranes and a dense layer of adventitious fibrinous deposit; the larger portion of the placenta has been detached or worn away, and evidence of the former fate is forthcoming in the small pieces of compact white substance which were found in the peritoneal cavity. Microscopic examination of this substance showed clearly the remains of placental tissue embedded in fibrinous material; these sections for the sake of comparison were examined side by side with specimens of normal placenta from a rabbit.

The external surface of the sacs appeared to the naked eye to be quite devoid of blood-vessels. None of the sacs contain any free fluid, the body of the fœtus being in close contact with the wall.

The Individual Sacs and their Contents. The largest sac, i., is of special interest, for it contained four fœtuses, and it is probable that the impaction of these fœtuses caused a rupture and the extrusion of the fœtal sacs. The outside of the common sac is roughened in places by flakes of lymph; inside there are several portions of placental tissue, some of the pieces being attached, others free. Two of the fœtuses are attached by umbilical cords to the remains of the placental tissue in the wall of the sac; they are in a better state of preservation than the other two fœtuses, and their bodies show two complete twists. Their cords have been twisted round and round as many as five or six times, and so tightly around the hind legs that these limbs are much twisted and almost amputated. The twists of the body and of the umbilical cord are in each case continuous and in the same spiral direction. The other two fœtuses show slight signs of previous torsion, and are not connected by umbilical cords to the sac; there, however, the remains of the cord in each case. There are no signs of putrefaction; the fœtuses appear, from their size, from the development of fur upon the head and from the condition of the incisor teeth to be at full term. In each case there are patches of lymph scattered over various

parts of the body. There is no normal colouring matter in the fœtal bodies; water has evidently been absorbed from them, and some of the tissues have undergone a fatty degeneration or infiltration.

Sac ii. is 16·5cm. in circumference, 7cm. long and 5cm. wide. The surface is smooth with the exception of a few fibrinous projections near the placental site which can be readily distinguished by touch. The wall of the sac is translucent, and is not adherent to the fœtus; the head and body can be easily distinguished by touch, but they are considerably compressed, probably by the absorption of water and the contraction of the sac.

Sac iii. is 16·5cm. in circumference, 6·5cm. long and 5cm. wide. The surface is smooth, but the wall of the sac is much thicker than in No. ii., and is opaque. The placental site and the various parts of the body of the fœtus can be easily distinguished by touch. As in the case of sac ii., considerable compression has occurred.

Sac iv. is 15·5cm. in circumference, 4·cm. wide and 6cm. long. The surface is smooth, and in thickness and opacity resembles No. iii. It is not possible with certainty to distinguish by touch the placental site or the various parts of the fœtus. The wall of the sac is in places slightly adherent to the fœtus, but can be easily detached. The sac was cut open and the fœtus was found to be tightly compressed and twisted in the posterior portion of the body. The placenta could be easily distinguished, and microscopic sections showed the characteristic structure. The body of the fœtus shows signs of fatty degeneration or infiltration.

Sac v. is 13cm. in circumference, 5cm. long and 3·5cm. wide. The walls of the sac are thin, and on section are found to be firmly adherent to the fœtus, the form of which cannot be distinguished owing to the compression and fatty degeneration or infiltration. The placental site could be easily recognised before the sac was opened.

The Evidence in favour of Rupture of the Uterus and Extrusion of the Fœtal Sacs. It has already been stated that direct evidence of rupture of the uterus was found. It is necessary, however, to consider also the indirect evidence in favour of this explanation, for the scar might easily have been overlooked or mistaken for a muscular band. In the first place, gestation in the Fallopian tubes or ovaries may be excluded, for the appendages are quite normal. The development of eight fœtuses to full term would doubtless have left indelible marks upon these organs. There remain the possibilities of primary abdominal gestation and rupture of the uterus or vagina. Against the former view is the complete absence of any

sign of former placental attachment between any of the five sacs and the abdominal organs or parietes. It is true that there are flakes of lymph scattered about the abdominal wall and viscera, but none of these show under the microscope any other characteristic than that of a fibrinous exudate. Such an exudation would arise as a part of the inflammatory reaction to the expulsion of the fœtuses into the abdominal cavity. No abnormal vascularity was observed in any part of the abdomen directly after the death of the animal from poisoning with coal-gas.

It has already been stated that a careful examination of the entire genital tract side by side with the organs of a normal doe showed evidence of a former rupture of the uterine horns about 1·cm. above their opening into the vagina. This scar, which was overlooked when the specimens were exhibited at the meeting of the Obstetrical Society, showed in microscopic sections the presence of fibrous tissue filling the space between the separated muscle of the uterus. The rupture must have occurred at least eight months before the examination of the animal, for in that interval she had four normal litters. From the size and development of the fœtuses in the sacs there is little doubt but that they had reached full term when the rupture took place. Sufficient explanation for the causation of the rupture is found in the fact that four fœtuses were enclosed in one sac. Two of these were attached by their umbilical cords to the wall of the sac and within three or four centimetres of each other. The twisted condition of these fœtuses and of their umbilical ends would point to the conclusion that it was the impaction of their bodies which caused obstruction to delivery and consequent rupture. Although there is no evidence how this marked torsion was produced, we can come to no other conclusion than that it was caused in the course of labour by the uterine contractions. It is possible that the torsion was subsequently accentuated by the contraction of the inflammatory material, which covered the fœtal sacs, and by the absorption of water from the fœtuses.

Previous Work upon the Subject. It is unnecessary to refer in detail to the records of similar specimens of fœtal sacs, which have been found in the peritoneal cavity, for these have been critically examined by Bland Sutton and quite recently by Kamann. The view held by Bland Sutton, that these sacs are not due to extra-uterine pregnancy, but to rupture of the uterus and extrusion of the fœtal sacs into the abdominal cavity, would appear to offer a full explanation of the phenomena.

It is well known that rupture of the uterus does occur in animals

during labour and that a not infrequent cause is a malpresentation or the impaction of a fœtus which is too large to traverse the genital canal. The mother in some cases recovers and examination of the uterus some months after the accident may show no obvious scar. Simonds was unable to find any cicatrix in the genital canal of a ewe twelve months after such a rupture. Without a most careful examination, both by dissection and microscopical sections a former rupture of the uterus may be easily overlooked, and thus erroneous conclusions may be drawn.

That the fœtal sacs become encapsuled by an inflammatory exudate after their expulsion into the peritoneal cavity, is shown by the experiments of Leopold. This observer placed fresh fœtal sacs in the peritoneal cavity of rabbits, and found that in nine or ten weeks they were covered over with a fibrinous capsule.

It is of interest in connection with the torsion which was observed in some of the fœtuses, which have been described in the present paper, to note that axial rotation of the gravid uterus has been observed in the ewe, cow, guinea-pig, cat and hare. Bland Sutton gives references to such cases; in some of these the torsion was so complete that the horn of the uterus was detached.

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The specimens described in this paper have been presented to the Museum of the Royal College of Surgeons of England.

Gyn. Staff Room University Hospital.

Acute Inversion of the Uterus: Spontaneous Reposition.*

By Robert Boxall, M.D., M.R.C.P.,
Physician to the General Lying-in Hospital.

On April 2nd, 1901, I was asked to see the following case in consultation with Mr. F. Gravely, of Newick, in Sussex:—

Mrs. B., aged 20, had been married 12 months to a bricklayer. She was delivered at term on Sunday, 31st March, at 2-0 p.m. Delivery of the child took place normally, and occupied 7 hours. She was attended by a practitioner who was well advanced in years, and was nursed by an old untrained country-woman. This woman agrees with the patient in saying that after the birth of the child the doctor pressed very much on the lower part of the belly; but, as the after-birth would not come away, he then pulled strongly on the cord. This woman added that she thought she should learn something, but she saw more than she bargained for when the womb came outside with the after-birth attached. No bleeding took place till the accident occurred. The doctor removed part of the placenta, and pushed the prolapsed mass back into the vagina, saying that he thought he had put it all right.

But, as the inversion had not been remedied, and the bleeding continued, he handed over the case to Mr. Gravely, who saw the patient late on the evening of the same day. He found the patient at that time so much blanched from loss of blood that he gave a saline injection 'per rectum,' and after giving hot douches, he tried to replace the uterus, but without success He at once took steps to obtain the services of a trained nurse.

In response to a telegram received from him, I saw the patient on Tuesday, 2nd April, at 3-0 p.m.—48 hours after the inversion had taken place. She was blanched, but not deeply. No hæmorrhage was then taking place, nor had the discharge been excessive during the intervening time. Since 10-0 a.m. that day a fœtid smell had been observed. The temperature was 101°F. A tear had taken place through about one-third of the perineum. The uterus was found to be completely inverted, and was lying in the vagina. On examining the surface of the mass, the placental site was found in front, and to the right and on it were portions of adherent placenta and a piece of amnion at the back.

The rent in the perineum was washed and the vagina was douched thoroughly with 1 in 3000 sublimate solution. Under chloroform an attempt was then made to replace the uterus. For this purpose, the whole of one hand was introduced into the vagina, and steady pressure was made on the inverted mass, combined with counterpressure exerted by the other hand through the abdominal wall above the pubes. But the cervix remained closed, and no impression could be made on it by the thumb through the

*Read at a Meeting of the Obstetrical Society of London, July 6th, 1904.

abdominal wall. At the same time, by pressure from below, the whole mass was pressed up above the brim, until it seemed no longer safe to continue the pressure. No sign of yielding being apparent, it was consequently decided, for the time being, to discontinue the attempt at reposition, and to treat the case as one of chronic inversion at a later stage.

After repeating the douche, about 4oz. of adherent placenta and membranes was removed, and the whole surface of the inverted mass was cleaned. Some bleeding followed, but was checked by hot douches, first of sublimate solution and then of plain water, till the loss nearly stopped. The whole surface of the inverted uterus was then packed with hot gauze wrung out in sublimate solution. The perineal tear was dressed separately in the same way. The packing was left for 24 hours, but the perineal tear was frequently redressed.

The patient was kept in bed for a month till the discharge stopped, and, till that time, douches were given regularly night and morning. The temperature reached normal at the end of the first week, but a week later, April 16th, at 8-30 a.m. it ran up with a rigor to 102, and on the 18th reached 104. From that time, it gradually declined again, became normal on 22nd and thereafter remained so. During the persistence of this febrile attack the patient lost rather freely, and after the red discharge stopped she had a good deal of whites. Her general health had improved, though she was still pale.

Six weeks after delivery, on May 14th, before being sent to London for further treatment, the patient was examined by Mr. Gravely. He found that the uterus had resumed its normal position. I saw and examined the patient on the following day. The uterus was then the size of a seven weeks' gestation and the cervix was patulous but it would not admit the index finger. The patient was still rather pale and sallow. Iron and salines were prescribed.

Seven weeks after delivery the periods were re-established. Marital relations did not occur till September. In December a miscarriage at two months took place. Some difficulty was experienced in the removal of the membranes, otherwise the patient made a good recovery. Fifteen months ago she had a child, and was delivered naturally. She is still pale, but otherwise enjoys good health.

There are four points in connection with this case on which comment is invited, viz., the rare occurrence of spontaneous reinversion, the date at which reinversion took place, the treatment adopted, and the action of the douche as a factor in causing reposition of the uterus.

1. *The rare occurrence of spontaneous reinversion.* Spontaneous reposition of an inverted uterus is an exceedingly rare event. On that ground alone I judged the case to be of sufficient interest to lay before the Society. I hope that the publication of this case will

induce others to record any similar experience, for I have heard of the occurrence of similar cases. One case, and one only, is recorded in our *Transactions*. In that case, which will be found in the tenth volume, reinversion occurred within a few hours of the accident, during the time that the doctor, having failed in his attempts at reduction, had gone to seek assistance. It differs from the one which I have related in that no considerable interval had taken place since delivery.

2. *The date at which reinversion took place.* In the case which I have recorded no examination was made from the third day until six weeks after delivery. Hence it is impossible to draw any certain conclusion as to the date of the reposition of the uterus. But I am disposed to think that it took place in the third week after delivery and that the febrile attack was associated with it. Moreover, I find, on referring to the daily notes made by the nurse, that at that time a certain amount of abdominal pain, as well as free red discharge, was present for some days. In the absence of other obvious cause for these symptoms, it is, I think, fair to infer that they were associated with the process of spontaneous reinversion.

3. *The treatment adopted.* To abandon, for the time being, attempts at reduction under the circumstances which I have detailed seemed to me the wisest course to pursue in the interest of a patient already weakened by loss of blood and rendered already febrile by absorption of decomposed products, who at that time was not losing more than is usual after delivery. The immediate treatment was directed to cleansing and keeping clean the torn surfaces of the perineum and the surface of the uterus and to prevent further absorption. Considering the facility with which reduction can be effected even in cases of long standing, I had every reason to hope that it would prove easy and would, I thought, be associated with less risk if deferred for a few weeks. But I must confess that the possibility of spontaneous reduction did not enter into my calculations.

4. *The action of the douche as a factor in causing reposition of the uterus.* I am disposed to believe that the constant douching may have materially assisted the process of reposition. The dressing applied to the uterus on the third day during the first 24 hours after the attempt which I made to reduce the inversion was not applied with any idea of assisting reinversion, but solely as a means of checking bleeding from the surface and of keeping it clean. I feel confident that the vagina was not packed by the dressing in such a way as to have exerted sufficient pressure to produce reinversion at that time.

Accessory Fallopian Tubes and their Relation to Broad Ligament Cysts and Hydrosalpinx.

By H. Macnaughton-Jones, M.D., M.Ch., M.A.O. (Hon. Causa), *Formerly University Professor in the Queen's University; and Examiner in the Royal University of Ireland.*

In the November number (1903) of this Journal is a paper, by Sampson Handley, which treats of the origin of hydrosalpinx from accessory Fallopian tubes, and the nature of broad ligament cysts. Handley criticises Kossman's view that broad ligament cysts are neither parovarian cysts nor cystic dilatations of the Wölffian diverticula or ducts, but are derived from accessory Müllerian ducts, sactoparasalpinx serosa.[1] Handley arrives at the conclusion that cysts above the tube which have a distinct cyst wall are derived from the distension of accessory Fallopian tubes, and points out that Doran had anticipated Kossman's theory of their Müllerian origin, having shown that pedunculated and other cysts, quite free from the parovarium, and developed above the tube, had possibly a Müllerian origin. From specimens examined in the College of Surgeons Museum, Handley, with Shattock, have demonstrated the histological analogy between the accessory hydrosalpinx and the ordinary changes found in hydrosalpinx. This analogy extended to the changes seen in the epithelium, the muscular structure, and the plicæ. A minute examination of a cyst removed by Cullingworth was made by Hamilton Bell, and he verified the pathological conclusions arrived at by Handley, showing that the cyst was an accessory Fallopian tube.

I recently operated upon a patient for retroflexion of the uterus by ventro-suspension. She had had considerable pain in the left side for some time previous to the operation, in consequence of which she was unable to pursue her calling of governess. On exposure of the adnexa I found a cyst attached to the left broad ligament. This was ruptured in the removal of the left adnexa. Seeing two accessory cysts in the free edge of the broad ligament, I asked Mr. Handley to examine these. In brief, his report was that the Fallopian tube lacked the hydatid of Morgani, and that the ovarian fimbria was absent. (Fig. 1).

"A microscopical examination of the edge of the broad ligament between the cysts shows that it is covered only by peritoneal

1. On the origin from Accessory Fallopian Tubes of Cysts of the Broad Ligament situated above the tube.—*Journal of Obstetrics and Gynæcology of the British Empire*, Nov., 1903.

PLATE I.

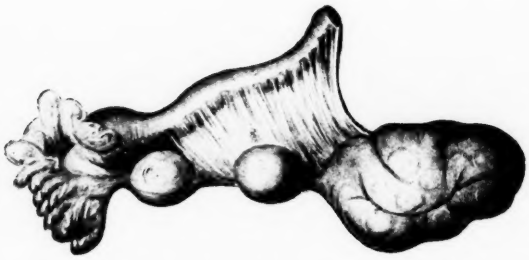

Fig. 1.— Left Uterine Appendages with the Cysts in the Free Edge of the Broad Ligament.

Fig. 2.—Plicæ of Cyst. There is a large vessel at the base of each.

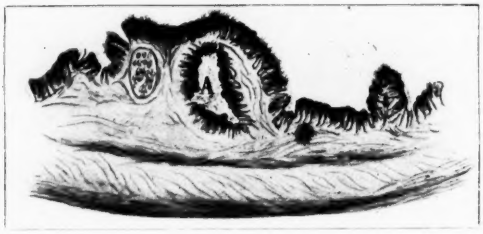

Fig. 3. The Plicæ fused at the Tips leaving Cavity lined by Columnar Epithelium.

endothelium, without a trace of the ovarian fimbria. The lower cyst has a thin wall of laminated fibrous tissue, lined within by cubical epithelium. It was not examined in its whole circumference. The upper cyst was embedded without opening it. Its thin wall consists of laminated fibrous tissue, which may or may not be degenerate muscle. It does not give the van Gieson staining reaction for muscular tissue. The cyst is lined by a single layer of columnar epithelium, which here and there is ciliated. At one point within the cyst are seen two vascular finger-like projections, with a fibrous core covered by columnar epithelium. (Fig. 2.) In an adjoining section these projections are seen to have fused by their tips, arching over a little cavity which is completely lined by columnar epithelium." (Fig. 3.)

"The structures just described are identical with the plicæ and sub-plical spaces which I have referred to as present in cysts of the broad ligament situated above the tube, and are familiar in ordinary hydrosalpinx. The two cysts present in this specimen are therefore derived either from the Fallopian tube or from diverticula connected with it (accessory tubes). I have stated my reasons for believing that the upper end of the Müllerian duct lies at the ovarian end of the ovarian fimbria, and that the latter structure is simply an opened-out portion of the Müllerian duct. The absence of the ovarian fimbria in this specimen and its replacement by two cysts whose walls have certain characters of a distended Fallopian tube, lends support to the theory. Owing to an abnormality of development the uppermost portion of the Müllerian duct, instead of dehiscing to form the ovarian fimbria, has in part become atresic and disappeared. The two cysts represent persistent portions of it. The specimen is important as proving that certain cysts of the outer edge of the broad ligament are of Müllerian origin."

In another case the right adnexa were removed by me at the same time as the uterus was suspended. These appendages were also examined by Mr. Handley, and his report was as follows:—"The specimen consists of the right uterine appendages, removed by oöphorectomy. Only the outer portion of the Fallopian tube, 4mm. in length, is present. The ostium is very small, though patent.

The ovarian fimbria is absent, and its place is taken by a cyst 15mm. in diameter lying in the free edge of the broad ligament. Attached to the external convexity of this cyst from above downwards are three appendages—(*a*) a stalked cyst 10mm. in diameter; (*b*) a tiny tuft of fimbriæ 3mm. long; (*c*) a small stalked cyst 5mm. in diameter."

"Two sharp folds of peritoneum, separated by a sulcus, run from the ostium to the base of attachment of the large cyst or its anterior and posterior aspects respectively. Hanging from the anterior fold is a cyst about 4mm. in diameter, and, from the posterior one, a bluntly cylindrical appendage 5mm. long, by 4mm. broad, which appears to have the characters of an accessory Fallopian tube. (Fig. 4.) In this specimen the ovarian fimbria is replaced by the large cyst in the free border of the broad ligament. This cyst should therefore show the peculiarities of hydrosalpinx, and indeed perfectly characteristic plicæ can be seen within it by the naked eye when the specimen is held up to the light. It seems probable, from the situation of the smaller cysts and appendages in or near the outer edge of the broad ligament, that the parovarium took no share in their formation, and that they represent in abnormal number the pronephric funnels from which the uppermost part of the Müllerian duct—certainly in the chick and probably in man—takes its origin."

In another case a cyst was removed by me from the Fallopian tube during an operation for ventro-suspension and ovarian resection (the same patient from whom the portion of ovary, Fig. 1, Plate VI., were taken). Mr. Handley's report on it was as follows: "The cyst is about 10mm. by 7mm. in diameter, and was attached by a rather thick pedicle about 7mm. long. It is undoubtely a hydrosalpinx of an accessory Fallopian tube. Although typical plicæ were not found in it, its pedicle is muscular, and possesses the characters of an imperfect accessory tube; the wall of the cyst is also muscular, though it thins and becomes fibroid and degenerate towards the free pole of the cyst. The latter is lined with epithelium which in parts is ciliated and columnar, while at other points it has lost its cilia and has become flattened."

The fourth case was one in which a cystic ovary with a hydrosalpinx was removed by abdominal cœliotomy from a patient who had been previously operated upon for a hydrosalpinx of the left side. The adnexa are shown in Plate II., Figs. 5 and 6. Mr. Handley's report of these appendages is as follows:—"The specimen consists of the right uterine appendages. The ostium is closed, and the tube is in an early stage of hydrosalpinx, its ostial end only being distended by fluid, while the uterine portion is somewhat thickened. The fluid contains a considerable amount of granular debris, which appears to consist chiefly of degenerate epithelium. Within the distended portion of the tube numerous plicæ can be seen. Above it is attached a small cyst, probably a hydrosalpinx of an accessory tube, while below it, attached to the broad ligament in the region of the

PLATE II.

S. A. S.

Fig. 4.—RIGHT ADNEXA. Accessory Hydrosalpinx and Fallopian Tube. Ovary bisected shewing a blood cyst.

Fig. 5.

The Right Adnexa; the ostium is closed; the ovary is adherent to the hydrosalpinx along the upper border of which a small cyst is seen. There are three others in the broad ligament beneath the hydrosalpinx.

Fig. 6.

Anterior surface of same, shewing the closed ostium; the ovary is seen in section; the meso-salpinx is obliterated.

PLATE III.

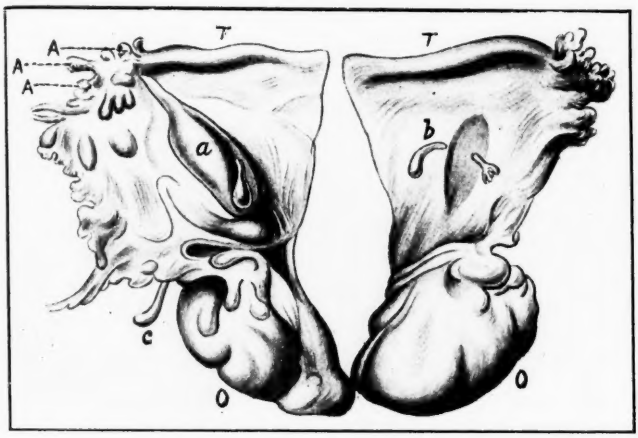

Fig. 7.—Uterine Appendages with Cysts of the Meso-Salpinx Accessory Fallopian Tubes (reduced by $\frac{1}{3}$).

The ovaries were cystic, each containing a central cyst one inch in diameter and some small cortical cysts. The divided surfaces shewing the cystic degeneration of the ovaries are not seen.

parovarian, are three minute thin-walled cysts. Numerous adhesions are present, especially between the ovary and the hydrosalpinx."

I have not as yet been able to have a microscopical examination made of these accessory cysts.

Plate III., Fig. 7, was drawn from a specimen in my possession. It was reported upon for me by Mr. Targett some years since. It consists of the right and left uterine appendages. At the right side there was a small pedunculated cyst, resembling a hydatid of Morgani, and close to it in the meso-salpinx was another pedunculated body (*d*) dilated towards its free extremity into a minute ostium with fimbria. Mr. Targett then reported this latter body as an accessory Fallopian tube. The situation of these bodies corresponded in position with the horizontal tubules of the parovarium. The corresponding ovary contained a blood cyst.

The left uterine appendages contained four cysts. The largest (*a*) is shown in the drawing with its pedunculated end at right angles to the Fallopian tube, its long diameter measuring one inch, and on its surface is seen another small pedunculated cyst like a hydatid of Morgagni, which exactly corresponded in structure to that in the right meso-salpinx. Two other small cysts were in the free edge of the meso-salpinx, unconnected with the vertical tubules of the parovarium. The horizontal tubules could be traced up to the pedunculated cyst. There were three distinct ostia opening into this tube. This ovary was also cystic. From the researches of Handley it would appear that these cysts were accessory Fallopian tubes of Müllerian origin.

Sclerosis and Cirrhosis of the Ovaries as Causes of Adnexal Pain and other Symptoms.

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A fact already known, but not so universally recognised or realised in practice, is that in two common sequences of chronic inflammatory changes in the ovary, and oftentimes correlated alterations in the structure of the Fallopian tubes, we have a most frequent cause of persistent adnexal pain. And not of pain only, but of many of the psychical and physical symptoms and the reflex neuroses which are attendant upon it. I am treating here mainly of the ovaries, though the tubes not infrequently are associated with, if not independent factors in, the causation of such symptoms. Indeed, to my mind there is no justification for speaking specially of ovarian pain apart from tubal, inasmuch as in a large percentage of cases there are pathological changes in the tubes as well as in the ovaries, and it would appear to be more correct to use the term "adnexal pain." Though it is not so common to find the tubes involved in varying stages of salpingitis, or so altered as to present the characteristic features of some typical form of tubal degeneration, without some correlative change in the corresponding ovary, still, this does frequently happen, though the latter may be, at any rate to naked eye inspection, healthy. The pain which is complained of in these cases is in no way to be distinguished from that which is rightly referred to some inflammatory process or degenerative condition in the ovary. It is here often that salpingostomy is indicated, and that the integrity of the tube should be maintained, and the ovary, if necessary, resected at the same time. The salpingitis, commencing as what Petit describes as "acute non-cystic," of mucous origin, passes later on into the chronic form, when secondary hypertrophic, and ultimately atrophic, conditions follow. It is during these earlier pathological states that tubal pain is felt, and in these stages there are not those immediately apparent physical signs present to the examining finger which we find in the sero-cystic, pyo-cystic and hæmato-cystic formations. In these latter conditions the acute pain often ceases, and may be absent altogether, or occurs only periodically, and is not so constant as it frequently is in the earlier stages of the salpingitis. Also it is greatly aggravated at the menstrual period. Some degree

PLATE I.

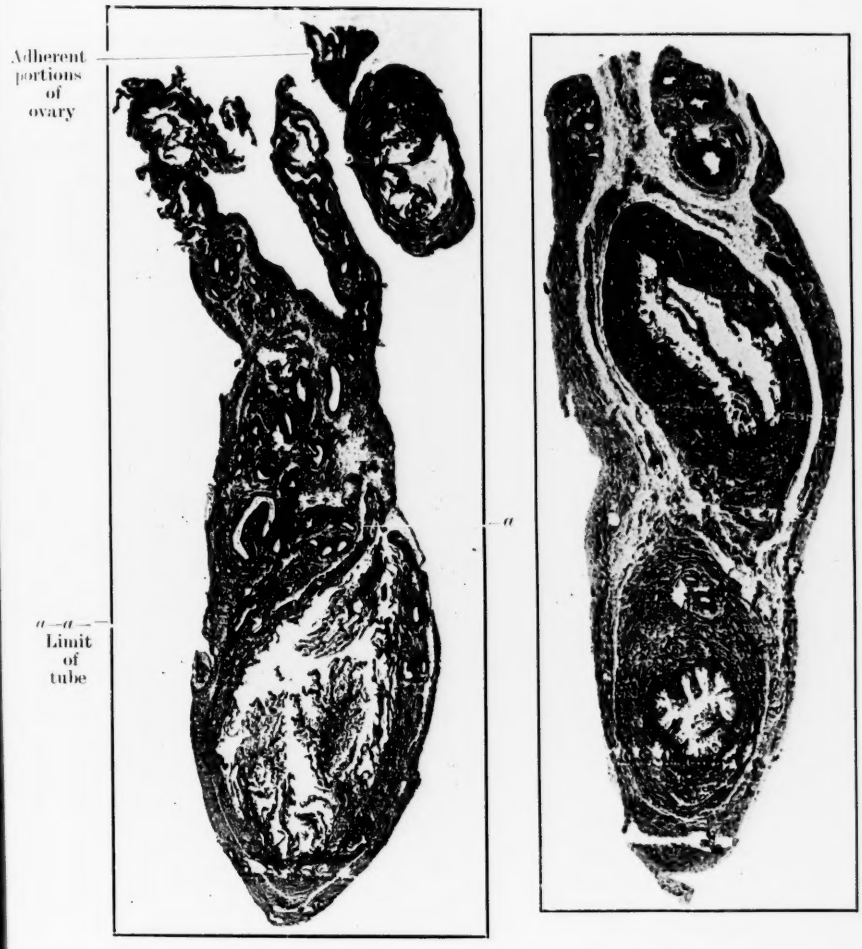

Fig. 1, Fig. 2.

Transverse Sections of Tubes removed from a patient with Pyocystic Ovaries (× 15). These are good examples of hypertrophic and desquamative salpingitis, in which the lumen of the tube is greatly encroached on, almost occluded; the plicæ are œdematous and denuded of epithelium. A portion of adherent ovary (*a a*) is included in the field with the right tube (Fig. 1). The left tube was folded on itself and the section was made through the loop (Fig. 2).

PLATE II.

CHRONIC HYPERTROPHIC SALPINGITIS.

Transverse Section of Tube (×15) showing parenchymatous degeneration and general state of fibrosis, blocking and almost obliterating the lumen. This is the secondary or atresic stage of desquamative salpingitis.

PLATE III.

Portion of cortex magnified. See Plate 4.
a
Small cyst containing blood.
a
A typical example of a tube affected with nodular salpingitis was removed with this ovary.

Fig. 1.—Natural size of prepared Section, 4½ cm. × 2½. See also Plate IV., Figs. 1 and 2.

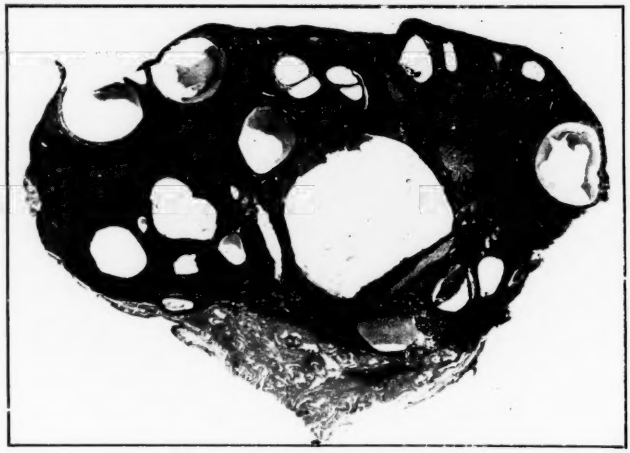

Fig. 2.—Natural size of prepared Section, 4 × 2½ cm.

Fig. 3.—Natural size of prepared Section, 3 cm. 7 m. × 1 cm. 8 m.

Photographs of Magnified Transverse Sections of Sclerosed and Cirrhotic Ovaries. In all, there has been interstitial fibrosis, obliteration of the corpora lutea and follicles, and cystic degeneration arising from both of the latter.

PLATE IV.

Fig. 1.

Portion of cortex of cirrhosed ovary; interstitial fibrosis (Plate III., Fig. 1, $\times 90$); follicular degeneration and cystic formation in the sclerosed area.

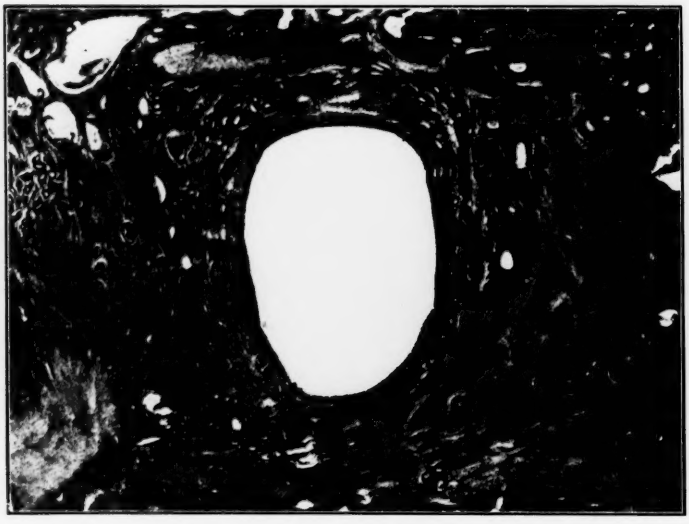

Fig. 2.

Portion from centre of same ovary. Plate III., Fig. 1., $\times 110$, a—a. Annular arrangement of fibres around a follicle denuded of epithelium, with surrounding fibrotic and hardened connective tissue elements.

of cervicitis or endometritis is not an uncommon accompaniment. Should parenchymatous changes in the Fallopian tube be associated with a sclerotic process in the ovary, we then have the characteristic appearances seen in parenchymatous and desquamative salpingitis. (Plates I. and II.) These resolve themselves principally into encroachment on the lumen of the tube, due to the chronic hypertrophic changes in the muscular wall and the formation of fibro-muscular tissue with the development of fibrous layers between the muscular fibres. Such connective tissue development will gradually in great part obliterate the muscular tissue and the vessels, thus blocking up or completely closing the lumen of the tube.

The first important practical fact, having a diagnostic and clinical bearing on the recognition and treatment of these conditions of the ovary, is the difficulty, in some cases, of diagnosis. The sufferer is often seen when the pathological processes are in an advanced stage. Yet there is no change in the parametrium, nor has there been any pre-existing or co-existent perimetritis. Not even by the most careful bimanual examination is it possible to differentiate satisfactorily such ovaries. This is especially so if the tubes be not affected. Yet the symptoms are out of all proportion to the signs discoverable to the most searching examination. In some it is dysmenorrhœa, in others menorrhagia, or it may be that the pain is the forerunner of, or attendant upon, scanty menstruation.

There is nothing new to be said on the pathogeny of the various forms of ovaritis. Those pathogenic sequences that I allude to, both in the cortex and stroma, are divisible into four main states, namely, hyperæmia, hypertrophy, sclerosis and cirrhosis. Allied with these there is generally cystic degeneration, having for its source various pathogenic causes. Intermediate phases mark transitional steps in the occurrence of these degenerative processes; these are (*a*) connective tissue hypertrophy, with interstitial thickening and fibrosis; (*b*) encroachment on and obliteration of the follicles and corpora lutea (which latter, according to Beare and Clark, maintain the circulation of the ovarian stroma and contribute to the function of ovulation); (*c*) thickening of the walls, rupture and obliteration of blood-vessels; (*d*) cystic formation from follicles, corpora lutea, blood infarctions, obliterated lymphatics, small pus cavities, or serous exudations. (Plates III. and IV.) Colloid degeneration of the contents of the Gräffian follicles (Mary Dixon Jones) is not infrequently present. Such processes lead to gross changes both in the capsule and stroma. The result is a pseudo-hypertrophic condition of the ovary extending from the

peritoneum and tunica albuginea throughout the entire stroma. (Plate V.) Hyaline degeneration may be present, and, as seen in rare cases, a calcareous deposit. Such sclerotic and cystic degenerative changes are seen in the ovaries of which complete and partial sections are shown. (Plates III. and VI.) This sclero-cystic state may remain as a permanent one, or further and grosser cystic, gyromatous, endotheliomatous, hæmorrhagic or suppurative degenerations follow. It is not, however, with such ultimate results that I am dealing, but rather with the typically sclerosed ovary that I have described, in which these metamorphoses have been going on slowly for years, commencing often during the earlier years of menstruation, the ovary not being necessarily painful, even to examination. It is previous to and during the catamenial epoch that adnexal pain, varying in degrees of intensity, is usually present. The gland on manipulation may not be sensitive, or only slightly so. This will depend to a great extent on any peritoneal involvement, or possibly pyo-cystic degeneration in the cortex or stroma.

In the cirrhotic ovary the degeneration has taken, in the secondary phases, a somewhat different course. There is thickening and hardening of the albuginea and cortex, with obliteration of the follicles and corpora lutea and ova. (Plate VII.) In parts the vessels are surrounded by a circumferential zone of fibrous tissue, the walls themselves being thickened. (Plate VII., Fig. 3.) With such encroachments the vessels, follicles and corpora lutea gradually disappear, and the result is a hard, small, contracted ovary, having often an uneven and puckered capsule. The cirrhosed ovary is often a source of greater pain than the other, and is the cause of dysmenorrhœa and sterility. It is the ovary that is most often correlated to morbid psychical conditions, neuroses and neurasthenia. While the ordinary sclerosed and cystic ovary is found bimanually enlarged and probably sensitive, the cirrhosed ovary is felt with difficulty, and gives a harder and more resisting feel to the digital sense. Should interstitial changes in the tubes be present, such as those I have mentioned, then these latter are found somewhat thickened and resistant to the examining finger.

In all such sclerotic and cirrhotic conditions pain is aggravated by any displacement of the ovary or uterus, or where there are congenital abnormalities of the portio or uterine canal. The so-called "ovarian dysmenorrhœa" which is associated with malformation of the portio, small external os, and stenosis of the canal, and which is unrelieved by section and dilatation of the latter, has its

PLATE V.

A Portion magnified (see Plate VII) Fig. 3.

Section of Ovary ($\times 5$) shewing advanced stage of sclerosis. Macroscopically the ovary cut with a fleshy appearance and without shewing any cystic cavities, the cortex having a fibrous feel. Under a high power the section presents a general fibrous appearance, the corpora lutea and follicles are obliterated, some very small cavities, the contracted remains of cysts are scattered here and there throughout the fibrous material and connective tissue elements. Some few blood-vessels are seen with hypertrophied walls. (See Fig. 3, Plate VII.) One small cyst cavity denuded of epithelium is present. In this case the Fallopian tube was adherent to this ovary, and the parenchymatous changes in its walls obliterated the lumen of the tube.

PLATE VI.

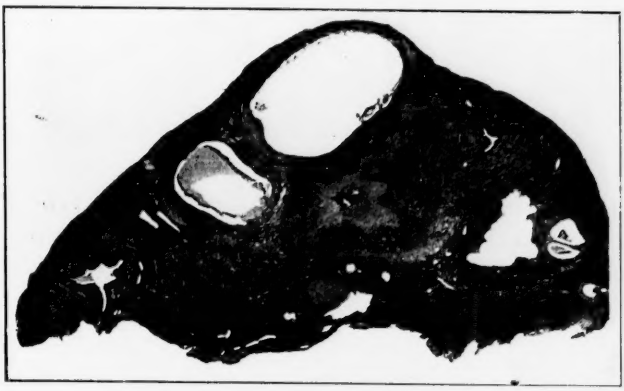

Fig. 1.—×3.

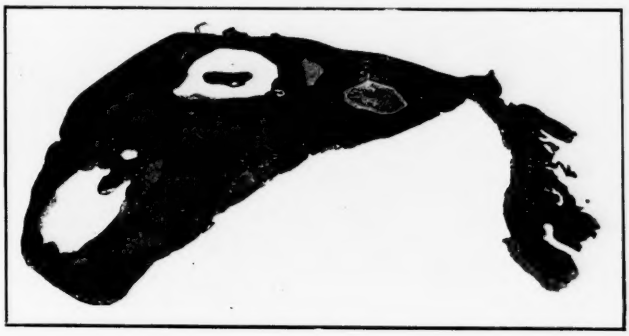

Fig. 2.—×3.

Resected portions of ovaries. Sclerosis of the cortex with cystic degeneration ; thickened albuginea.

Portions of ovaries resected at the same time that ventro-suspension was performed for retro-displacement. In these cases there had been, for some years, severe adnexal pain and dysmenorrhœa added to the symptoms due to the retroflexion. The ovaries were divided up to the healthy stroma and the degenerated capsular portions removed. The tubes were healthy. Dr. Cuthbert Lockyer's report on the resected portions of the ovaries was :—

The tunica albuginea is thickened ; the deeper stroma is very cellular ; the follicles are atresic and degenerate, and also reduced in numbers. There are corpora lutea in all stages of involution, and some have become cystic. The latter show an excess of lutein cells in their wall.

Both patients have been completely relieved of the symptoms.

PLATE VII.

Fig. 1.

Fig. 2.

Sclerotic and cirrhotic ovaries removed from a patient, aged 24, for persistent adnexal pain, dysmenorrhœa, and menorrhagia. There was cystic degeneration throughout the entire stroma. The microscopical appearances were much the same as in Fig. 1., Plate I. Complete cure followed the operation.

Fig. 3. (× 45.)

Section from ovary (Plate V. A) showing fibrous formation and minute cyst cavities; a thickened vessel is seen in the field near the margin.

frequent source in these tubal and, more frequently, ovarian degenerative changes. After years of drugs, local manipulative and pessary treatment, and futile operative procedures, these patients come at last to salpingo-oöphorectomy, the only permanent relief to a constant invalidism and swiftly recurring attacks of pain. I do not delay here to give particulars of cases proving these facts, or to show that the severity of the symptoms that attend upon the presence of such ovaries is out of all proportion to the evidence afforded by examination. Indeed, in some cases where the microscope shows advanced cirrhotic change, the ovaries may appear almost normal, not only in bimanual examination, but even when seen and handled. The pathological conditions I show in Plate III., Fig. 2, were present in a patient who suffered intense pain for years, and where serious mental consequences threatened. The ovaries, drawings of the sections of which are shown in Plate VII., were removed from a patient aged 23, who had been a victim to agonising pain for years and who was in a wretched state of health, when I operated, from the suffering and severe menorrhagia. The operation and a Weir-Mitchell course completely restored her to health. The patient (aged 30) referred to on page 219 (Plate VI., Fig. 1) thus described the immediate result of the operation: "for the first time in my life I have just gone through a period with absolutely no pain." In several cases I have known women rescued from the abuse of morphia by salpingo-oöphorectomy, in some of whom disturbance of mentalisation was such as to threaten a necessary restraint. While deprecating the performance of the operation of salpingo-oöphorectomy in any case in which either the clinical symptoms or the physical signs do not distinctly indicate radical interference, I cannot but feel that the just reaction against indiscriminate operation may impel the surgeon to hold his hand in cases in which nothing save removal or resection of the affected adnexa can relieve the woman. Under such circumstances a "masterly inactivity" is not surgery.

In view of our present knowledge of the feasibility of transplantation of portions of healthy ovaries and its results, I should in future transplant these into a prepared surface of the broad ligament in those cases where such healthy parts can be obtained.

[For reports on several of these sections made by Dr. Eastes I am indebted to Dr. Cuthbert Lockyer.]

Placenta Prævia.

By M. Sinnetamby, M.D., F.R.C.S., *Medical Superintendent, de Saysa Lying-in Home, Colombo, Ceylon.*

No case in obstetrics, except perhaps puerperal eclampsia, presents so much difficulty and causes so much anxiety as placenta prævia. I shall in this paper discuss chiefly the etiology and the treatment of this abnormality.

During the seven years ending 1903, we have had 34 cases of placenta prævia in the Lying-in Home, of which 1 was central, 3 partial, 20 marginal, 3 lateral and 7 unknown. This classification only refers to the condition before labour, as a central one may become converted into partial, partial into a marginal, and marginal into a lateral after dilatation of the os.

Etiology. Hofmeier, supported by Kaltenbach, advanced the theory that under certain abnormal conditions the villi of the chorion læve, which atrophy during normal course of pregnancy, become functionally active and develop a placenta of reflexal origin continuous with the placenta of serotinal origin. Peters' description of the formation of the decidua reflexa is, I believe, universally accepted. The ovum when it reaches the uterine cavity rapidly works its way into the compact layer of the uterine decidua by the phagocytic action of the trophoblast. It not only makes an excavation deeply, but also laterally. The deeper the excavation the thicker is the reflexa, especially the basal portion. It is believed that the functional activity of the villi of the chorion depends upon the vascularity and thickness of the deciduæ that surround it. If the lower reflexa fulfils this function a reflexal placenta results, which finally becomes united with the decidua vera of the cervical zone, unless rupture and hæmorrhage provoke premature expulsion of the ovum. Several specimens illustrating this condition have been recorded, and the last one by Clarence Webster is worthy of note.

That this is not the only mode of formation of the placenta prævia has been admitted by all. Specimens of placenta prævia of serotinal origin have been exhibited by Webster and others. Webster, commenting on his specimens, draws the conclusion that a low implantation of the ovum could only explain the serotinal origin of a prævial placenta. While this is true in a good number of cases where the placenta is entirely serotinal and is wholly implanted in the lower segment, it cannot be so in cases having the

characteristics of Webster's specimen. This specimen shows not only placenta of serotinal origin, but also that of reflexal origin. The serotinal portion extends almost from the fundus. In my opinion this can only be explained by the ovum having entered the compacta in the usual manner, and worked its way downwards between its layers until it reached the lower zone. In these cases the serotinal surface being extensive, the placenta becomes equally so, even extending to the reflexa; as a result the placenta is thin as is usual in these cases. If the specimen is one of low implantation it is not likely that the placenta will extend from the fundus to the os internum and to the decidua reflexa.

If you examine the placenta in this abnormality you find it generally thin, spreading over a large area. Sometimes you find it oval, reniform or bilobed with succenturiate formations. The cord is usually attached eccentrically at the border, or has a velamentous insertion. The ovum is usually fertilised in the Fallopian tubes, and by the time it reaches the uterus its trophoblast becomes functionally active, and it at once burrows into the mucous membrane of the fundal portion of the uterus. But should the functional activity of the trophoblast be delayed until the ovum reaches the lower uterine segment owing to late fertilisation, it is not unlikely that the ovum would attach itself in that zone with the formation of a serotinal placenta prævia. The youngest human ovum known is the one described by Peters, which was found in the uterus of a woman who died three days after missing her menstrual period. In this specimen the primitive ectoderm representing the trophoblast has been demonstrated to invade the decidual tissue by phagocytic action and to open out blood-spaces. An ovum devoid of trophoblast cannot attach itself, and will be carried away by the ciliary current in the absence of any intrinsic motile powers of its own, from the Fallopian tubes down to the cervix. Therefore arrest and implantation of the ovum depend on the functional activity of the trophoblast, and may occur in any part of the genital tract, from the ovary down to the cervix. Should the attachment take place in the Fallopian tubes ectopic gestation results. Should it occur in the upper or middle zone normal pregnancy results, whilst should it occur in the cervical zone placenta prævia results.

In a case of tubal gestation associated with twin pregnancy in uterus reported by Balfour Marshall in the November number of this JOURNAL, in which the twins, which are probably homologous, and the fœtus in the tubal sac are reported to be of the same age, the interesting question arises, how is it that one ovum is arrested

in the tube and the other finds its way into the uterus. In this case there cannot be any question of obstruction in the tube. It exactly fits in with the views herein enunciated. The first ovum fœcundated in the usual way develops its trophoblast by the time it enters the uterus. The second ovum, fœcundated earlier than the first, is arrested in the tube owing to early development of the trophoblast.

Source of hæmorrhage. In the reflexal variety the growth of the ovum stretches the reflexa, which may give way and produce hæmorrhage and abortion, or the accident may be produced by the chorionic villi becoming very active and rendering the reflexa weak and liable to rupture as in the case of tubal gestation. This accident generally occurs before the fourth month, that is, before the reflexa meets the vera. If the reflexa escapes this accident it becomes blended with the vera which may be partial or complete. In the former condition (that is, if there is no complete blending of the reflexa and vera) the reflexa may give way and produce hæmorrhage any time between the fourth month and full time. In the latter pregnancy may go on until interrupted by the separation of the placenta consequent on the canalisation of the cervical canal and descent of the ovum. In the serotinal variety the hæmorrhage is due to the separation of the placenta during dilatation of cervix. Hæmorrhage then from placenta prævia may occur any time during the course of pregnancy, and some of the unrecognised cases of abortion and accidental hæmorrhage are due to this abnormality.

Treatment. There is no fixed line of treatment applicable to all cases, but it must be prompt, and the life of the mother cannot be considered safe until delivery is effected. The maternal mortality in the Guy's Hospital Charity is 16·1 per cent. In some institutions it is as high as 30 or 40 per cent. (Müller). The mortality to children according to Galabin is 60 to 75 per cent. In the treatment of placenta prævia the following objects should be attained:— (1) Preventing and counteracting shock; (2) checking hæmorrhage; (3) promoting uterine contractions; (4) facilitating dilatation of the cervix; (5) expediting delivery after sufficient dilatation of the cervix. Unfortunately in this country we seldom or never see patients with this abnormality in the early stages. In the type of cases seen in hospitals the os is sufficiently dilated to admit one or two fingers or more at least sufficiently large to put in a Champetier de Ribes' bag. If the os admits two fingers this bag is introduced at once after rupturing the membranes which ought to be done without exception. If this precaution is not taken the arrest of the hæmorrhage is not

complete and there is always a tendency for further separation of the placenta resulting in asphyxia of the child. This is produced by the bag lifting up the membranes and effecting a separation of the placenta which when the membranes are ruptured will retract with the dilating cervix and thereby ensuring a complete compression by the bag. If the placenta is marginal or lateral the membranes can be easily reached, but if central the placenta should be pierced through before reaching the membranes. In the incomplete variety the edge may be reached by pushing the finger towards the side of the uterus corresponding to the abdomen of the child. In this way I have nearly always succeeded. The bag may be left alone if the pains are strong and if there is no bleeding until expelled by natural means when forceps may be applied and delivery effected. If there is slight oozing, traction or a weight may be applied to the bag supplemented by a firm abdominal binder. If the case is seen before a diagnosis can be made Herman's recommendation of puncturing the membranes and introducing a tent into the cervix, or the American method of plugging the cervix and vagina with antiseptic gauze also after puncturing may be tried. A firm abdominal binder should be put on in any case. I have had no experience of these methods of treatment and therefore cannot speak with any authority.

I have reserved to the last the discussion of the sheet anchor in the treatment of placenta prævia, viz., saline transfusions. One often gets a case in which there has been a good deal of hæmorrhage, the os half dilated, the hæmorrhage absent and the placenta partially detached, pulse feeble and frequent. Your first impulse is to deliver the patient at once by the traditional treatment of version, and if you do so the result will be disastrous. At least such has been my first experience. This has made a great impression on me. Sudden emptying of the uterus after severe hæmorrhage produces such a severe shock as to defy all known restoratives. I now counteract this fatal collapse by early saline rectal injections or transfusions under the armpit, according to circumstances. My matron has instructions to promptly wash out the bowels and give a saline rectal injection in every case of hæmorrhage without waiting for me. Nearly four pints of salines are generally given, two per rectum and two under the cellular tissue. During the seven years ended 1903 we have had 34 cases of placenta prævia, with seven deaths, and during the last three years, 1901, 1902 and 1903, when the treatment above detailed has been strictly carried out, we have had 22 cases with no death, and the key to our success has been early saline transfusions, Champetier's bag and patience.

Three Attacks of Eclampsia occurring in a Multipara.

By A. J. Sturmer, Lieut.-Col. I.M.S.,
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Mrs. W., an Eurasian, commenced to menstruate in her 15th year, and was always regular, the flow lasting four or five days attended with pain in the lower abdomen on the first day. Discharge sometimes profuse. Micturition normal; said to be scanty during the pregnant state. Was married in her 19th year, and was admitted to the hospital in her 20th year pregnant with her first child in May, 1893. The membranes were ruptured artificially, and on the 23rd she was delivered of a live female child. She progressed favourably, and left the hospital on the 3rd of June.

She was re-admitted in August, 1895, pregnant for the second time, aged 22 years, in a semi-conscious state and in the ninth month of pregnancy. No uterine souffle, legs swollen; 16 ounces of urine were drawn by catheter and found to be loaded with albumen. She was apparently quite well when she went to bed, but had a fit during the evening and another this morning; before she could be removed from the carriage she had a third fit. This fit was followed by two others, which were mitigated by the use of chloroform. The cervix was dilated by means of Champetier de Ribes' bag, and as the patient was very weak, the head was perforated and crushed with the cephalotribe. The fœtal heart was doubtful on admission. The records are very deficient and only go as far as 5-45 p.m. on the day of delivery. During this time she had three more fits, and ether ℥ss was injected fourteen times owing to her weak condition. She recovered and left the hospital on the 14th of September. The third and fourth confinements were natural in the hospital.

She was admitted on the 14th of January, 1901, at 2-30 a.m., with a history of having had one fit at home and another on the way to the hospital. Labour commenced at midnight. She was about eight months pregnant; fœtal heart doubtful; feet and hands very œdematous; urine loaded with albumen. At 4 a.m. she had an injection of morphia gr. $\frac{1}{4}$, having had two fits. At 9 a.m. a female child was stillborn, weighing 3lbs. 10oz. She had eight fits before delivery and six after. At 10-45 a.m. she had an injection of morphia gr. $\frac{1}{2}$. On the 15th she had two more fits; albumen $^1/_{12}$th; was very restless during the night; frequent twitchings of the hands

and face; temperature 102° F. Morphia gr. ¼ was repeated, and she was ordered a mixture of acetate and citrate of potash. On the 16th the urine was free from albumen; she passed a good night. The note made on the 17th is: "Restless; slept very little during the night, shouting and trying to get out of bed; complains of headache." On the 18th a trace of albumen was again noticed, but after this it quite disappeared; a mixture of chloral and bromide was given at bedtime. On the 22nd it is noted that she was quite sensible and able to answer questions. She continued to improve, and left the hospital on the 6th of February. The sixth confinement was also in the hospital, and was natural.

On the 12th of March, 1904, she was admitted for albuminuria, pregnant with her seventh child. The urine was found to be very scanty and loaded with albumen; both feet were œdematous. She was placed on a milk diet and given thyroid extract gr. 5 three times a day, and under this treatment the albumen quite disappeared and also the headache from which she at first suffered. She was advised to remain under observation until such time as labour set in, but she refused to stay in hospital, and left on the 21st of March. She was re-admitted on the 2nd of April of this year at 4-30 a.m., with a history of having had one fit at home, another on the way to the hospital and the third at the gate. Fœtal heart audible; uterus corresponds to seven months; her upper garments were saturated with blood, due to her having bitten her tongue severely. Urine very scanty and loaded with albumen. On admission morphia gr. ½ was injected, and shortly after thyroid extract gr. 10 was also administered, gr. 35 were subsequently given in divided doses. She had therefore in twelve hours 45 grains of thyroid. Saline injection under the breast one pint and acetate and citrate of potash mixture were also given. She had in all thirteen fits before delivery and none after. The cervix was dilated with a Barnes' bag, which was expelled as soon as it was put in. A male child was stillborn, weighing 3lbs. 12ozs. On the day after delivery 46 ounces of urine were passed, containing about one-twelfth albumen. Her face was considerably more swollen on the second day, but after this the œdema rapidly disappeared. She complained of headache up to the sixth day after delivery. The urine was examined on several occasions, but no casts were ever found. She left the hospital on the 21st of April, the nineteenth day after delivery, apparently quite well.

Remarks. In our experience of eclampsia two attacks occurring in the same patient are unknown. In the last ten years there have

come under treatment 271 cases of eclampsia and in no single instance among these, except this case, has eclampsia occurred twice. Cases of recurrent eclampsia are not unknown in literature, but I imagine three attacks in the same individual are without record. The present case is a good example of the fact that the affection is not due to disease of the kidney. The microscopical and chemical examination of the urine show that when she left the hospital after her third attack there was no disease of the kidney, and if previous disease had been present it would in all probability have been accentuated. The swelling of the face after the disappearance of the fits has been noticed here in other cases, but why the face should swell, whilst the œdema of the extremities disappears I cannot say. In this case the swelling of the face was very much more marked on the second day, and the œdema of the lower extremities was fast disappearing.

Author's Method.—Two fingers of the left hand are passed into the vagina and feel how much and in which manner the head engages, while the thumb of the same hand is moved along the brim and appreciates the amount of over-lapping. The right hand grasps the head by a *Pawlic* grip and pushes it into the pelvis.

Note on a New Method of Estimating the Relative Sizes of the Maternal Pelvis and Fœtal Head.

By J. M. Munro Kerr,

Obstetric Physician, Glasgow Maternity Hospital.

In the April number of the Journal of last year I described a method for estimating the relative sizes of fœtal head and maternal pelvis, and pointed out the importance of making that the basis of treatment in moderate degrees of pelvic deformity. Unfortunately the illustrations which should have appeared were not reproduced.

The method described was in many respects a combination of those recommended by Müller and Pinard. In referring to Müller's method I made certain mistakes in my description of it, and was very glad indeed to be corrected, and in so kindly a manner, by Dr. Koenig, whose note on the subject appeared in the September number of the Journal. Since then I have had some correspondence with Dr. Koenig. I learned from him that although in many respects Müller's and my method resembled each other, in two very important points indeed they differed. The two points which I refer to are the grasping with the left hand the fœtal head by a Pawlic grip by which one pushes the head into the pelvis, and the feeling with the thumb of the hand that is examining vaginally the amount of overlapping of the head at the brim. The illustration explains this.

I have no wish to magnify the importance of the modification described; I do, however, think it is a distinct improvement upon Müller's method.

REVIEW OF CURRENT LITERATURE.

OBSTETRICS.

Retroversion and Retroflexion of the Gravid Uterus.

CHROBAK (R.). *Volkmann's Sammlung*, June, 1904. No. 377.

KULMUS, of Danzig, about the year 1731, seems to have been the first to have found a backward displacement of the uterus in a woman in the fourth month of pregnancy. Others claim that Walter Wall was the first to establish a diagnosis of the condition, and his case was the one which furnished the specimen (1754) figured in Hunter's atlas of the gravid uterus. [Hunter described this condition in his lectures in 1754; the atlas was published later. This specimen is shown in the painting by Sir Joshua Reynolds, which is the best known portrait of Wm. Hunter.] Many observers have noted cases, and the conditions are described in the text-books, but with varying degrees of fulness and accuracy. Differences of nomenclature have led to some confusion of the actual conditions. Dührssen's recent monograph has thrown some light on this difficult subject. By retroversion of the gravid uterus is meant any backward deviation by which the fundus of the pregnant uterus is carried backwards and the cervix forwards. The author thinks it unnecessary to adopt the usual three degrees of displacement, and describes two; in the first the fundus lies not lower than the os uteri, in the second the fundus has fallen distinctly below the os. In retroflexion, on the contrary, the axis and shape of the uterus are distorted so that the fundus is bent backwards, forming an angle with the cervix at about the level of the os internum.

The author discusses the terminology at length and the confusions arising from loose use of terms. Retroflexion is the term usually applied to both conditions in Germany, retroversion in France; retrodeviation is a useless word, as it specially includes mere retroposition. Much confusion is caused by the inclusion of the condition of pouching of the posterior uterine wall; the use of the addition spurious or partial does not help matters.

Dührssen describes the following varieties of pouching: (1) In small pelves the posterior uterine wall may become pouched in cases of (*a*) retroflexion and (*b*) anteflexion; (2) pouching of the anterior wall of an anteflexed gravid uterus in a small pelvis; and (3)

pouching of the sides of an anteflexed pregnant uterus in a small pelvis. To these divisions he gives the names of (1*a*) retroflexio uteri gravidi partialis vera and (1*b*) retroflexio uteri gravidi partialis spuria. To this Chrobak objects that all sorts of errors may arise if the pouching of the posterior wall in a case of anteflexion can be named retroflexion at all, even with such additions as spuria and partialis. He proposes, accordingly, to call this retroversio partialis by the name of sacculation of the uterus (aussackung).

Gravid retroversion-flexion is not uncommon: of 26,391 out-patients in his gynæcological clinique the condition was found 72 times, but of these only 16 had any urgent symptoms. Out of 28,000 patients in the obstetrical department there were 21 cases; of these three were retroversions and 18 retroflexions. But it must be remembered that in many cases no symptoms are produced to lead the patient to consult a doctor, and these cases are spontaneously reduced. Authorities from Hunter to E. Martin have for the most part been of opinion that the malposition occurred during the course of the pregnancy and have ascribed it to general relaxation and especially of the round ligaments, to abdominal pressure, and over-distended bladder. Taylor-Smith and Veit on the other hand, think that the condition occurs from the impregnation of a previously malposed uterus. Under normal conditions a full bladder raises the uterus while it pushes it backwards; but if the uterus be low in the pelvis it may be pushed towards the hollow of the sacram, but it will yet rise about the 12th week if not hindered by some abnormality, such as the projection of the sacral promontory to such an extent as to make the conjugate diameter of the pelvis less than the length of the retroflexed uterus. Another hindrance is found in the presence of inflammatory adhesions with or without the complication caused by the presence of fibroids or ovarian tumours. If the round ligaments are to reduce the displacement it is essential that the cervix should not lie above the edge of the symphysis pubis. Should the cervix so lie and the fundus lie directly downwards we may expect incarceration to be produced, but at a later period than usual, as the lower uterine segment has room to grow upwards towards the abdominal cavity. The author is of opinion, based upon his own observations, that, unless the case be complicated by adhesions, a retroflexed uterus is always spontaneously replaced, but a retroverted one almost never. In a case of flexion the cervix is more or less fixed under the symphysis, and the stretched anterior wall tends to contract and so cause replacement, and to this action rather than to the round ligaments is the mechanism to be explained. The recto-

uterine ligaments also assist by pulling the cervix backwards. Further, the growth of the fœtus upwards, sacculating the anterior wall into the false pelvis can draw up the rest of the uterus, as we find is the case in the growth of many tumours. Retroversion-flexion causes as a rule few symptoms at first and the onset of these may be sudden with ischuria paradoxa—inability to pass water and dribbling from an overdistended bladder. Rectal symptoms occur earlier with retroversion rather than with flexion, by the end of the third month, as against the fourteenth week. But in complete retroversion the stretching upward of the vagina may allow the uterus to grow till beyond the middle of pregnancy before showing symptoms of incarceration.

The author proceeds to discuss the sacculations that may occur in various directions with one of them incarcerated in the pelvis. These may be almost pedunculated and from the thinning out of the uterine walls may attain a large size, so that after reposition of the pelvic part the whole uterus appears much smaller than before, as the thinned parts contract again. This sacculation of the uterine walls may lead to separation of the ovum and abortion. Should this not occur the sacculation may be so extreme that the lower portion may appear at the vulva or through the anus: in such circumstances the condition of the patient may be extremely bad with all the symptoms of pressure added to those of peritonitis, uræmia and sepsis.

The bladder conditions are important, and do not depend merely on the amount of urine retained; pressure on its base causes congestions and œdema, and actual hypertrophy sometimes occurs.

After referring to dilatation of the ureters, Chrobak goes on to discuss in detail the necrosis of the bladder which has been so well described by Haultain, among others. Of 53 cases of this condition Haultain found 34 associated with gravid retroversion. The author seems to agree with Pinard and Varnier's dictum that in a case of gravid retroversion the uterus is of little importance, the bladder is all important.

The history of fatal cases shows the importance of an early diagnosis. The pressure of adhesions, tumours, etc., must be carefully made out. This cannot so well be known when the uterus fills the pelvis. After mentioning various points in the diagnosis he warns the observer that a catheter passed through the urethra may evacuate only a small quantity of urine on account of its having passed into the lower part of the bladder only, below the point of compression, or on account of the eye becoming blocked with débris; the urethra may be very long with the meatus drawn up even above the upper

edge of the symphysis; it may be necessary to place the patient in the knee elbow position and draw down the vaginal wall bit by bit. The bladder must be gradually emptied, and it is noteworthy that it often refills with extraordinary rapidity; even when empty it does not completely contract but may form a mass easily mistaken for a tumour.

The diagnostic points of retroflexion from the two degrees of retroversion are given in tabular form. With sacculations the diagnosis may be very difficult, as also when tumours or a hæmatocele complicate pregnancy. Among other diagnostics the author mentions digital exploration per urethram. Gangrene of the bladder is the chief danger, and if there be no threatening of this the observer can afford to wait to establish his diagnosis.

It is of the utmost importance accordingly to diagnose and treat the gravid retroversion or flexion early, not necessarily by reposition, as treatment by pessaries is often sufficient. If the case be one of complete retroversion the sooner the reposition is effected the better, for this condition does not tend to spontaneous reduction. The moderately retroverted and the retroflexed uterus are to be replaced at once, if this be moderately easily possible, as the conditions often lead to abortion. The patient must also be warned, after the reposition, that abortion may occur. In early pregnancy a pessary must be worn after reposition. The first step in the operation is the emptying of the bladder, which is often followed by spontaneous reduction. Should hæmorrhage into the bladder follow, this may be checked by ice applied externally or by hot injections into the bladder, with the use of styptics such as adrenalin; should the hæmorrhage prove intractable and fears be entertained for the life of the patient the bladder may be laid open and packed. The hæmorrhage sometimes ceases when the uterus is replaced. If the bladder is to be irrigated a soft instrument is recommended on account of the risk of wounding the softened or necrosed walls. If catheterism fail suprapubic puncture is dangerous from extravasation of necrotic and septic materials; free incision is safer, if it can be made from the vagina.

Attempt should be made to replace the uterus by hand, per vaginam rather than per rectum; various positions may be tried, especially with the pelvis raised: the other hand may be used through the abdominal wall to try to guide the uterus to one side of the promontory. If the operation, on account of adhesions, etc., cannot be completed at one sitting, it is well to maintain the ground gained by a pessary or with iodoform gauze packing. The operation may be

assisted by dragging on the cervix in certain cases. In cases of complete retroversion it may be necessary to push the whole uterus forcibly up into the false pelvis to get room to effect the reposition. Adhesions or tumours may render all attempts fruitless; even continuous elastic pressure with packing or with the kolpeurynter may fail. If all manœuvres fail abortion may be induced by introducing a bougie through the cervix if it can be reached, or by puncturing the uterus with a trocar per vaginam. Abdominal section is not recommended in cases uncomplicated by tumours: it is dangerous and difficult, especially from the adhesions to a necrosing bladder. The uterus may more easily be opened from the vagina. If it can be reached high up near the cervix (anatomically low) it may even be incised without opening into the peritoneum. The author, though without personal experience of this procedure, recommends it in cases where abortion does not immediately follow on puncture of the membranes and at the same time the symptoms of bladder rupture are threatening. But this operation is not without risk, immediately of sepsis, and later of rupture in a subsequent pregnancy. A lengthy bibliography is appended.

E. H. Lawrence Oliphant.

Study of a Specimen of Ovarian Pregnancy.

Webster (J. Clarence). *Amer. Jour. of Obstetrics*, July, 1904.

The patient was 36 years of age, and had previously been pregnant twice, the last time eight years ago. She menstruated normally on July 4th, 1903. Soon afterwards the breasts became tender, firmer and larger; nausea developed gradually, the August period was missed, and she considered herself pregnant. On September 7th, whilst in church, she was suddenly seized with cramp-like pain in the abdomen; pallor of the face was noticed and she felt somewhat faint, but was able to walk home. On the following day hæmorrhage occurred from the vagina and persisted for about the same time as a normal menstrual period; clots and shreds of tissue were passed; colicky, labour-like pains still continued and compelled her to keep her bed; on the first of October vaginal hæmorrhage recommenced.

On October 6th an examination was made; the uterus was found to be slightly enlarged and freely movable; on its right side was a rounded mass larger than the uterus and quite distinct from it. The left ovary and tube were normal. Abdominal section was performed;

half an ounce of dark fluid blood was found in the utero-vesical pouch, and the tumour was found to be the enlarged right ovary, the right Fallopian tube was freely movable above it, and was removed together with the tumour. After removal the ovarian swelling was seen to be an irregularly rounded mass, measuring 8cm. by 7cm., the wall was intact, there was no indication of rupture; the surface was grey in colour and presented a few brown or purple knob-like elevations. On section two portions could be distinguished, a thin, peripheral layer and a large medullary area in which lay a smooth-walled cyst-like (amniotic) cavity. The peripheral layer consisted of somewhat altered ovarian stroma, containing a few Graafian follicles and corpora albicantia; in addition to these, in that part of the gestation sac which corresponded to the hilum of the ovary, were large spindle or polygonal cells, resembling decidual cells, but in some of their characters also resembling wandering lutein cells. Small pieces of fœtal syncytium were found in the thickest part of the sac wall, in most instances they appeared to lie in spaces and there was very little indication of direct invasion of the wall. The medullary area consisted of a mass of tissue composed of blood in various stages of alteration and of chorionic elements, villus-stems, villi and masses of syncytium in various stages of degeneration; in this area was situated the amniotic cavity, its amnion well preserved and lined by cuboidal epithelium, and containing a small quantity of liquor but no fœtus. The chorion showed all the usual characters of that membrane, the villi were well formed and covered by the usual epiblastic layers, Langhan's cells and the syncytium.

The topographical relationships of the gestation sac in this specimen are beyond dispute, the ovum is situated entirely within the substance of the ovary; but several other points of great interest arise. Those who describe follicular development of ovarian pregnancy usually assume that the ovum is fertilized *in situ* in the follicle; the absence of a corpus luteum in the gestation sac in this specimen seems to prove that the ovum has developed elsewhere than in a ripe follicle.

"For some years," says Dr. Webster, "I have held, on phylogenetic grounds, that there is strong reason for believing that the fertilized human ovum can only begin its development in tissue derived from the Müllerian duct. There are doubtless many who think that recent demonstrations of ovarian gestation necessitate a modification of this view. Such a conclusion must be regarded as hasty and ill-considered." He then briefly reviews the evidence we possess of the occasional extension of Müllerian tissue into the ovary; he directs

attention to the recent observations of Schmorl and others with regard to the occasional occurrence of small localized areas of decidua-like cells in the ovary in cases of uterine pregnancy, and tentatively advances the view that these areas represent detached portions of Müllerian tissue which have become attached to the surface of the ovary.

"It is possible that the special genetic reaction in these areas may sometimes determine the embedding and growth of a fertilized ovum in the ovary, and if the opinion that these areas are Müllerian in origin be correct, it is not unlikely that all cases of pregnancy in ovarian tissue may still serve to support the dictum that the fertilized ovum in the human female begins its development in Müllerian tissues."

"Though no definite layer of decidua is found in my specimen, I have little doubt that the scattered groups of large cells found in the ovarian stroma nearest the ovum, are decidual in character."

HERBERT WILLIAMSON.

Puerperal Pyæmia: The Prospect and Cure of Treatment.

OPITZ. *Deutsch. med. Wchnschr.*, 1904. Nos. 25, 26 and 27.

THIS paper is largely taken up with a discussion of the value of the Trendelenburg method of treatment by ligature or excision of the thrombosed veins, with or without total extirpation of the uterus. The results of this treatment as collected by Opitz have been very disappointing,—only one recovery out of ten cases operated on. In the Berlin Clinic, where only severe cases are admitted, the statistics show 33 recoveries to 41 deaths, under the older methods of treatment. The operation is only justified in selected cases, but to make such a selection is extremely difficult if not impossible. It might be thought to be indicated in the more severe cases, but it is almost impossible to recognise the gravity of a case of pyæmia, for the apparently mild cases may go downhill rapidly while the unfavourable cases may recover after a protracted illness. Pyæmia following abortion is graver than that after a full term confinement; in the Berlin figures the numbers in abortion-pyæmia were 13 recoveries to 20 deaths, in the full-term cases 20 to 21. After criminal abortion the prognosis is even worse, but the difficulty of ascertaining the facts of the matter makes this of little value as a help in the selection of cases. In the full-term cases an analysis

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of the Berlin numbers shows that those arising after intra-uterine operations, such as manual removal of the placenta, and after placenta prævia were of much graver import, probably from the direct infection of the placental veins. The figures do not, however, show any connection between the period of origin of the disease and its gravity, the results being much the same whether it began early or late in the puerperium. The complications also do not afford any trustworthy guide, though in the statistics under review the records on this matter are not very accurate as the patients were often too ill to permit of extensive examination. In six cases no complications were present and yet four of them proved fatal. On the other hand pneumonia was diagnosed seven times and yet there were six recoveries and only one death. With regard to the duration of the disease, more than half the fatal cases died within three weeks, but it is only playing with words to say that the prognosis is better the longer the disease lasts, for it is only saying that a patient who can resist it for three weeks has a fair chance of recovery in the end. The age of the patient is of no import in the prognosis. The strength of the heart and the capacity of assimilating nourishment are the most important factors in forming an idea of the gravity of a case, but the writer recalls the fact that he has seen deeply comatose patients recover. In the future some help may be obtained from a leucotyte count, but at present there is scarcely enough evidence on this point. It may thus be stated that the prognosis in puerperal pyæmia neither justifies the Trendelenburg operation nor gives any indication as to when it is to be done.

But the operation cannot be set aside on these grounds alone, so it must be examined from the anatomical standpoint. So long as one or both ovarian veins alone contained infected thrombi, the operation would be a simple matter, but how often is this the case? The hypogastrics are frequently involved and their removal with their wide ramifications would involve a complete clearing out of the pelvis with the whole of the internal genitalia, and very few pyæmic patients are in a position to withstand such radical treatment. The *post-mortem* records show much too general a diffusion of the infection to justify so heroic a measure. To operate early in the disease, *i.e.*, after the first rigor or so, is not only to operate unnecessarily on many cases, and even then with some uncertainty as to whether the infection is sufficiently local for removal. Much the same thing applies to total extirpation of the uterus, after the method of Schultze, for the first rigor means that the infection has spread to the pelvic veins and that removal of the uterus alone would be fruit-

less. Hence in this disease we must rely on other than surgical measures.

The last part of the paper is taken up with the method of treatment adopted by the writer in those cases which have come under his own care. These amount to 18 in all, of which 13 recovered, four died, and in one the result was unknown. This favourable result (23 per cent. of recoveries) he ascribes largely to general treatment and especially to the administration of a lessened amount of alcohol. Nothing is known which has a direct influence on the disease, so the treatment consists in keeping up the body strength and assisting in the elimination of poisons. The principal means of supplying nourishment are milk and eggs with some of the easily-digested proteid preparations, such as sanatogen, somatose or plasmon. Alcohol ought only to be given in small quantities, preferably of some light wine, the large doses of brandy or heavy wines usually given cause marked depression of the heart as soon as the stage of stimulation is passed. Sugar, either cane or grape, is a very valuable form of easily assimilated nourishment, and may be freely administered in drinks, gruels, egg-flips, and so on. It also leads to an increased consumption of fluid so that more milk is taken. Plenty of fluid ought to be given in order to assist the elimination of toxines by the kidneys. As it cannot be given too freely by the mouth owing to the tendency to dyspepsia, rectal infusions of normal saline solution may be given two or three times a day. When this is prevented by the presence of diarrhœa occasional subcutaneous infusion may be substituted. When there is offensive diarrhœa, it must not be checked, for it is one of the means by which the body gets rid of the bacterial toxines. Sometimes it may be necessary to administer aperients, as calomel, for the cases in which the bowels are obstinate are very serious; three of the writer's patients had obstinate constipation and all three proved fatal. The avoidance of all movement is of prime importance in order to minimise the chances of the dislodgement of infective clots. The patient must be kept strictly to the dorsal position and great care taken in washing and moving her. The danger of hypostatic pneumonia can partly be got rid of by making the patient take several deep breaths at intervals or by laying cold cloths on the chest. Hofbauer's nuclein treatment is of value and so is the administration of phenacetin, antipyrin and the like. The Credé silver inunction is valueless but the collargol intravenous injection is more likely to be efficient. Among the other methods unfavourably commented on by Prof. Opitz are serum injections, turpentine injections as recommended by Fochier, and, apart from the removal of

retained products of gestation, all intra-uterine manipulations such as curettage or continuous irrigation.

J. S. Fairbairn.

Psychosis of Pregnancy: Induction of Abortion: Recovery.

Treub (H.). *Zentral. für Gynäkol.*, 1904, No. 23.

The author contributes an interesting case to the scanty literature on this subject. The patient, 31 years of age, had already gone through three pregnancies without the occurrence of any mental symptoms. When three months advanced in her fourth pregnancy she called upon Treub and told him she was convinced that she would give birth to a monster. This was a fixed idea, the result, she said, of having read Victor Hugo's "Notre Dame de Paris" in the early weeks of her pregnancy. There was no family history of insanity. The patient was greatly distressed, and had attempted to commit suicide by throwing herself in front of a train. She would not eat "because the monster would grow;" she could not sleep because at night she heard the monster "shrieking like a person choking." She was put into hospital, and then it was found that she really did not sleep, nor was it possible to give sufficient nourishment even by using the argument that she must get strong to prepare herself for a miscarriage. Treub knew that in such cases alienists held out little hope of abortion curing the mental condition, although his own limited experience had made him more hopeful. Winkler, a mental specialist, saw the patient in consultation, and expressed the opinion that the induction of abortion would not result in much good; still he agreed that the condition was so evidently connected with the pregnancy that it was justifiable to attempt to cure it by this means. In an ordinary way, he thought, one might look for recovery in seven or eight months. A laminaria tent was introduced through the cervix, and almost at once a change for the better was noted in the patient's condition. The following night she slept well, but dreamt that the monster was crying because it had been pricked in the head by a needle; the physical basis of this dream could be readily found in the process of cervical dilatation. Next day the quite normal contents of the uterus were removed under anæsthesia, and in 14 days the patient was dismissed cured. Treub does not wish to generalise, as regards the treatment of these cases, from a single observation, but merely desires to record the gratifying result sometimes obtained from the induction of abortion.

Oliphant Nicholson.

Myoma and Pregnancy.

WINTER. *Monats. für Geburts. und Gynäkol.* Band xx., Heft 2.

THE results of 23 cases of pregnancy complicated by fibroids were given and the subject was discussed under the headings:—

1. How does a fibroid influence pregnancy, labour and puerperium?
2. How is the fibroid influenced by the pregnancy?

Progress of the pregnancy in these cases. In five cases pregnancy proceeded without any disturbance. In the others pain of some kind was complained of, generally sense of weight, bearing down or actual acute pain. Sometimes this pain was due to contractions, in others to circumscribed peritonitis or secondary changes in the fibroid. Bleeding occurred very seldom, except in three cases of abortion, only two cases being noted once in a submucous fibroid and once in a woman who later aborted. Two deaths were noted, one from pneumonia after an exploratory laparotomy, and once from a ruptured aneurysm. Out of 14 cases treated by a purely expectant method, nine ended quite naturally, three aborted, and in two labour came on prematurely.

Labour occurred spontaneously in nine cases, forceps were used once and manual extraction of the placenta once in a case of footling presentation.

Puerperium was a febrile in nine cases, phlebitis and thrombosis of the saphenous vein occurred once and one case died of sepsis.

In general it may be remarked that pregnancy is rarely without some disturbance if myomata are present, but these disturbances are seldom serious and generally cease spontaneously. Labour occurs normally so long as the fibroid is not so situated as to oppose an irremovable obstruction, the third stage gives no trouble as a rule, and the puerperium is aseptic so long as the usual antiseptic precautions are taken.

With regard to the second heading for discussion, only the cases submitted to operation were considered. Of the five specimens removed by operation one was sarcomatous, two were softened, and two presented no change. But it is of importance to note that in four cases of myomata removed soon *after* a pregnancy the tumours were found to be necrotic, and this change no doubt is the result of pregnancy. Whether this is due to uterine contractions during labour, or to the anæmia of the puerperal uterus is not thoroughly known. Myomata rarely require operation on account of pregnancy, the enlargement which occurs, so often due to œdema, does not pro-

duce important effects by filling up room in the abdomen which ought to be occupied by the pregnant uterus.

The author operated upon six out of 23 cases (25 per cent.); of these two were conservative operations and four radical. Although the author in general is an adherent of radical operations for fibroids, he would be inclined to a more conservative principle in pregnancy, because, in 70—80 per cent. of the reported cases the pregnancy is undisturbed, the mortality of about 300 cases is only 2 per cent., and because the symptoms for which operations during pregnancy are undertaken are cured, just as surely as symptoms from fibroids apart from pregnancy are cured by operations. At the same time a conservative operation can only be performed on those uteri which present only *one* fibroid and not on those which have many commencing.

THOS. G. STEVENS.

The Bacteriology of the Mouth in Sucklings.

JEANNIN (CYRILLE). *L'Obstétrique*, July, 1904.

To understand the pathogenesis of infectious diseases it is essential to know the organisms which normally live in our bodies. The bacteriology of the mouth has, so far, been studied chiefly in the adult. Campo and also Bonnaire and Keim examined children, but studied only the aerobic bacteria. Lewkowicz studied the anaerobic organisms as well, but his observations were too few in number to be conclusive. The author undertook a series of observations in 1903 in the bacteriological laboratory of the Clinique Tarnier; aerobic and anaerobic organisms were studied in new-born infants, in children suckled and artificially fed, in premature children, in children "incubated," and in children affected with various diseases, such as syphilis, gastro-enteritis and diphtheria. At birth the mouth was sterile in four cases. In the fifth it contained *staphylococcus albus* and *bacterium coli commune*, but the infant had hare-lip and cleft palate. In the hours succeeding birth the mouth becomes contaminated and contains one or two varieties of organism, such as *staphylococcus aureus*, *bacterium coli commune* and various anaerobic streptococci.

Suckling may indeed, as Campo has said, wash away many bacteria, but there are many more varieties to be found after the child has been at the breast; in addition to those mentioned above we find *bacillus subtilis*, *bacillus lineola*, leptothrix in several varieties and three unnamed organisms. The author calls these

bacillus X, coccus Y and coccus Z. The author thinks that the total number of organisms is largely increased, and the buccal liquid rapidly coagulates milk. In children from three days to one year old there is always found a rich growth of organisms in health; this seems unaffected by the nature of the feeding, as it is the same in children fed at the breast, on sterilised milk or on farinaceous foods. The *pneumococcus* is most commonly found and various streptococci, but the *streptococcus pyogenes* is rare, as are also the anærobic organisms. In sick children the buccal flora was more abundant and more varied, quite independently of the manner of feeding; anaerobes were more abundant in numbers, in variety and were more active, producing much gas in the culture medium. *Streptococcus pyogenes* was abundant in most cases, also *bacterium coli* as well as other pathogenic organisms, such as *micrococcus fetidus* and *bacillus perfringens*. Three observations on premature children in the incubator confirm the opinion of Dr. Hutinel that, as might be expected, the temperature and other conditions of the hot chambers are favourable to the growth and multiplication of organisms and so to the development of various infections.

The observations do not bear on the higher moulds and fungi of the mouth; examinations for acidity gave doubtful results, but the author inclines to the opinion that the healthy mouth is alkaline, tending to become acid in disease. The presence of anaerobes in disease may be explained by the presence of deep folds in the mucosa and by the action of some organisms in absorbing oxygen, thus allowing anaerobes to grow. The coagulation time of milk treated with buccal fluid had no constant relation to the number or variety of microbes. Further, milk was found to be a very poor medium for the growth of organisms. The germs inhabiting the mouth are chiefly saprophytes and do not cause any lesion; their activity is kept down in the healthy mouth, but they become noxious if there be any abrasion of the mucous membrane, mechanical or produced by teething or by the presence of higher organisms, like *oïdium albicans*. Cleansing of the mouth must be carried out with the utmost care so as not mechanically to abrade the surfaces nor injure it chemically; as an antiseptic wash he recommends oxygenated water (hydrogen peroxide).

E. H. Lawrence Oliphant.

On Breast-Nursing by Women in Factories.

BUDIN (PIERRE). *L'Obstétrique*, July, 1904.

DR. BUDIN is well known as an obstetrician and for the good work he has done in establishing cliniques for advising the women who have been delivered in his wards in regard to the care of their infants. He read a paper recently on the question of affording facilities for mothers to suckle their children in factories and workshops generally throughout France. It is obviously the opinion of the profession in this country that the ill-development of many of our poorer classes must be combated from the outset, and the work being done in this direction in France cannot fail to be of interest to all who have the welfare of our labouring classes at heart.

The Académie de Médecine some time ago sent the report of Messrs. Balestre and Gilletta on infantile mortality to the Minister for the Interior, and this report was ordered by the French Senate to be transmitted to the Conseil Général and to the Préfet of each Department. This report showed that of children dying before the age of twelve months about one-half die of digestive troubles, that is, of essentially preventible disease. Apart from ignorance and prejudices on the part of the mother, the great cause of digestive troubles is artificial feeding, and this is widely spread over France. It is necessary therefore to make a vigorous effort to get mothers to suckle. Dr. Budin goes on to describe the good results of his own clinique and of similar ones established in many parts of the country. Besides the mothers who are physically unable to suckle, too many are prevented from doing so by their occupations; for instance, in Lille about one-third of the children are not suckled. To combat this it is desirable to secure the co-operation of employers if possible without legal compulsion. The Messrs. Blin, of Elbeuf, have given a praiseworthy example by recommending their workwomen to place their children in the municipal crèche beside the factory where they are encouraged to suckle their infants by a bonus of £4 which Messrs. Blin pay into the savings bank in the name of each child so suckled. A notice also is posted in the workrooms explaining the benefits of suckling. As 600 women are employed, the action is certainly too generous to be imitated by all employers, but all employers might at least afford facilities for their employees to nurse their children. The Minister of Finance, M. Rouvier, has shown a good example by giving orders that all women employed in the State tobacco factories be given facilities for nursing. This is done in

various ways—by establishing crèches, by subsiding existing crèches or by at least providing a room in the factory to which the children can from time to time be brought for suckling. A report from the Minister is added to the paper giving details of the methods employed. In Italy a law, passed in 1902, makes it compulsory for the employer to provide a nursing room if he has not less than 50 women in his factory.

E. H. Lawrence Oliphant.

GYNÆCOLOGY.

Huge Ovarian Cystoma.

Zacharias. *Münch. med. Wchnschr.*, August 2nd, 1904.

The patient was a woman of 62, who had had eight children. She had noticed some enlargement of the abdomen for 20 years and had been advised to have an operation 15 years before. The abdomen was enormously distended, and reached to the level of the knees, its greatest girth being 187 cms. Marked dyspnœa, pulse 108. In order to relieve the dyspnœa the cyst was tapped and 60 litres (123 lbs.) of yellowish-green fluid of sp. gr. 1025, evacuated. An attempt was made to remove the cyst, but its wall was so intimately adherent to the anterior abdominal wall that its removal was not effected. The sac was plugged with iodoform gauze and drained. The patient died about one month later; no *post-mortem* examination.

The author has collected other cases of very large ovarian cystomata from the literature and makes some suggestions as to the best mode of procedure in operating. His list, however, is far from complete, and the chief interest in the communication lies in the record of the case.

J. S. Fairbairn.

Spontaneous Rupture of an Ovarian Cyst under Chloroform: Immediate Laparotomy.

Jacobs. *Le Progrès Médical Belge*, August 15th, 1904.

The tumour had been noticed for some months. It occurred in a primipara, aged 47. The abdominal wall was stretched over a tumour which reached above the umbilicus, and was clearly fluctuating. The flanks were resonant. The uterus was pushed to the left, and the

tumour could be felt in the right fornix, and above the anterior vaginal vault. The diagnosis was made of an ovarian cyst of the right side, probably multilocular, and operation proposed. On July 9th, 1904, the patient was put under chloroform. She was exceedingly nervous, and the struggling stage was prolonged and severe, and accompanied by vomiting. When placed on the operating table it was seen that the abdomen was collapsed, without trace of the tumour, to such a degree that Jacobs' first impression was that perhaps he had to deal with a phantom tumour. He considered, however, that it had been too clearly manifest some few seconds before for this to be the correct explanation, and that the disappearance must be due to rupture of the cyst. On opening the abdomen an enormous quantity of blackish-brown fluid escaped. The tumour could be seen partially collapsed, and when drawn outside it was clear that the largest cyst had ruptured, and poured its contents into the abdominal cavity. The tumour was a cyst of the right ovary, but had invaded to some extent the right broad ligament. The left ovary was also cystic, the size of an orange, and very adherent in the pouch of Douglas. At the bottom of the pelvis were some papillomatous masses arising from one of the cysts of this left ovary. The appendages of both sides were removed, together with the body of the uterus. Jacobs states his belief that few surgeons have seen a cyst of the ovary rupture under their eyes. He recalls an observation of Verneuil regarding the spontaneous rupture of an extra-uterine pregnancy under chloroform during the preparation of the patient.

R. Hamilton Bell.

The Pathology of the Corpus Luteum.

Santi. *Monats. für Geburts. und Gynäkol.* Bd. xx., Ht. 1 and 2.

This paper, which contains material of great interest, is the result of observations made upon serial sections of ovaries from about 60 cases. Most of these ovaries were obtained from operations for various conditions of the sexual organs, but some were obtained from *post-mortem* examinations. The author discusses the changes which may occur in *corpora lutea* under the following headings: Simple hypertrophy, relations to osteo-malacia, dendritic proliferation, cystic degeneration and true cysts of the corpus luteum, changes in the corpus luteum through secondary hæmorrhage, disturbances of the lutein layer as a result of secondary hæmorrhage, hæmatoma of the corpus luteum,

abscess of the corpus luteum, tuberculosis, growths of the corpus luteum (benign and malignant). The author comes to the following conclusions:—

1. Apart from pregnancy a considerable degree of hypertrophy can occur in *corpora lutea* as a result of inflammatory stimulation of the ovaries; more particularly he has described this in connection with fibro-myomata.

2. If one distinguishes small cystic degeneration of the ovarian follicles from true follicle cysts, one can also distinguish a cystic degeneration of the corpus luteum from true corpus luteum cysts, the two conditions having corresponding ætiological factors.

3. According to the arrangement of the various layers one can distinguish four types of corpus luteum cysts, which have different ætiological factors. These four types do not appear to us to be very exactly differentiated but they are described as follows:—

(*a*) Cysts whose innermost lining consists of the lutein connective tissue.

(*b*) Cysts whose innermost lining consists of a connective tissue layer which covers over the lutein layer.

(*c*) Cysts whose innermost lining consists of cells which cannot be distinguished certainly as epithelial or endothelial, covered by a lutein and a fibrous layer.

(*d*) Cysts whose innermost lining is epithelial in nature and which comes directly into contact with the lutein layer.

4. The lutein layer of these cystic formations undergoes the same degeneration phases as in the normal corpus luteum (fibrous and hyaline degeneration), and the various relations can exhibit very different appearances in the various parts of these cysts.

5. Secondary hæmorrhages can occur in the tissues of *corpora lutea*, which can change them in various degrees. Such hæmorrhages rarely attain a greater size than a cherry and larger ones than these are usually hæmorrhages into pre-existing corpus luteum cysts.

6. Abscesses of *corpora lutea* may be found, generally of small dimensions only, but larger ones have been described, and these are only corpus luteum cysts which have become infected with pyogenic organisms.

7. Benign and malignant tumours of the corpus luteum are found. The first are fibromata, which most probably arise as a connective tissue wall of corpus luteum hæmatomata. The latter, considering the connective tissue nature of *corpora lutea* are sarcomata.

8. All the above-mentioned changes can occur alike in the corpus luteum of pregnancy or the corpus luteum of menstruation.

9. One cannot definitely state yet whether there is any relation between anatomical changes and disordered function of the corpus luteum.

THOS. G. STEVENS.

The Cytology of Papilliferous Ovarian Cysts.

BONNEY (W. F. VICTOR). *Archives of the Middlesex Hospital*, London. Vol. iii., p. 178.

THE author has studied the pathology of papilliferous ovarian cysts from the cytological standpoint with special reference to the nuclear changes exhibited by the epithelial cells covering the intra-cystic papillæ. He points out that the researches lately published by Messrs. Farmer, Moore and Walker, and confirmed by Bashford and Murray, have established the fact that the nuclei of the cells of malignant new growths exhibit during division that form of mitosis known as heterotype, the term implying a form of karyokinesis, which eventually results in the chromosome "content" of the daughter cells being reduced to half that which obtains in the mother cell instead of being of the same value as obtains in the ordinary or somatic type of mitotic division.

This heterotype mitosis is characteristic of the cells of gametic tissues, *i.e.*, the sperm and egg mother cells, and when conjugation between the male and female elements takes place the full or somatic number of chromosomes is restored in the fertilised ovum which then begins to divide by somatic mitosis to form the embryo. In plants a post-heterotype division occurs through many generations before the sexual cells are formed, constituting the prothallus, all the cells of which are characterised by the reduced number of chromosomes, but in animals only one cell division occurs between the heterotype and fertilisation. This post-heterotype division is known as homotype, and conforms generally to the somatic type, but differs from it in the reduced number of chromosomes.

Diagrams are appended illustrating the difference in appearance between the *V*-shaped chromosomes of the somatic and homotype mitosis and the loop chromosomes exhibited in heterotype mitosis. The discovery that the heterotype and subsequent homotype mitosis is characteristically exhibited in the cells of carcinomata and sarcomata is of wide-reaching importance.

Farmer, Moore and Walker have applied the term "gametoid"

to these tissues and have suggested an analogy between malignant new growths and the prothallus of plants. Bashford and Murray have gone further and described appearances of nuclear conjugation seen in the cells of some malignant neoplasms met with in lower animals.

The author then details, with the aid of drawings, the results of an exhaustive examination of the material obtained from three cases of papilliferous ovarian cystomata prepared and stained by cytological methods. He points out that these tumours offer a unique field to test the value of the statement that the heterotype mitosis is characteristic of malignancy, because amongst them are found neoplasms ranging through all degrees of malignancy down to practical innocency. The cysts in question were probably incepted in the paroöphoron, though certain proof of this was not possible. Two of them exhibited rapid growth and the clinical features of malignancy. The third was of slower growth and the features characterising malignancy were not marked.

Microscopic examination revealed in the first two cases an enormous number of mitotic figures, most of which were heterotypical and homotypical. Giant mitoses and multipolar mitoses were of frequent occurrence and, in short, the nuclear appearances of the new growths were exactly similar to those observed in rapidly-growing carcinomata and sarcomata. In the third cases mitoses were very sparsely observed, and those seen were of the somatic type. Thus the clinical views on these three cases were supported by cytology. The author thus confirms the observations of Farmer, Moore and Walker, and points out that cytology lends a valuable aid to the diagnosis of the malignancy or otherwise of these cysts. Nuclear conjugation was not observed.

The author concludes from the examination of these and other growths that the malignancy of the neoplasm cannot be said to depend upon the occurrence of the generative type of mitosis, but rather would it appear that it indicates an assumption of more or less independent growth by the cell in virtue of which it can assume a method of reproduction not possessed by it, whilst it formed merely a part of a specialised cell group in the complex of the living body.

VICTOR BONNEY.

Appendicitis and Salpingitis Occurring during Lactation.

PÉRAIRE and BENDER. *Bulletin et Mém. de la Soc. Anat. de Paris*, 1904. No. 4.

THE authors describe a case which they consider to be one of concurrent disease of the appendix vermiformis and of the right uterine appendages. The patient was a woman of 20, who, up to the time of the attack, was nursing an infant of 15 months. She was seized with severe pain in the right iliac fossa accompanied with vomiting; the attack being diagnosed as one of appendicitis, she was operated on on the fourth day of her illness. At the operation the appendix was found acutely inflamed and adherent to the right appendages, which were involved and therefore removed with the appendix. Examination of the parts showed acute inflammation of the appendix, tube and ovary. The authors regard the case as one of concomitant acute inflammation of both structures, but the evidence appears to be very slender as both the history and the histological examination point to a primary appendicitis involving the right appendages secondarily.

J. S. FAIRBAIRN.

Hydrosalpinx with Torsion of the Tube.

M'ILROY (A. LOUISE). *The Scottish Med. and Surg. Journal*, August, 1904.

A MULTIPARA, aged 43, last child eleven months before admission, was admitted into the Glasgow Royal Infirmary in August, 1903. During her last pregnancy she had pain in the left hypogastric region, and during labour felt as if something obstructed delivery. The labour and puerperium, however, were normal. On getting out of bed she had pressure symptoms in the bladder and rectum, present till admission. On examination a firm, cystic, rounded mass was felt posterior to the uterus, tender to firm pressure. The sound passed $2\frac{3}{4}$ inches in the normal direction. At the subsequent operation the left tube was removed, being adherent to surrounding organs. The patient made a good recovery.

Pathological description of the specimen. It consisted of a cyst about the size of a large orange, formed by the dilatation of the outer end of the left Fallopian tube. It was semi-transparent, with fairly thick walls. The contents were blood-stained fluid. Along its upper surface and connected by the meso-salpinx was the tortuous inner

portion of the tube, but its outer connection with the cyst was not well defined owing to an area of necrosis. The cyst was adherent to the tube about its middle third by a band of peritoneum; at this portion the tube had undergone complete torsion. Further along the walls were thickened until about quarter of an inch from the uterine end, where the tube had again become completely twisted, and its lumen occluded. A similar torsion had occurred about an inch from the cyst. Thus the specimen showed three complete torsions. At the lower end of the tumour was a small cyst, probably the hydatid of Morgagni, showing the presence of the fimbriated end. The ovary was not adherent. The interior of the cyst showed flattened ridges resembling the plicæ of the tube. In some portions of the wall there was a thin layer of fibrin deposit. Microscopical examination showed the uterine part of the tube to be filled with blood clot, with almost complete obliteration of the folds. The muscular wall was thinned and contained large blood-vessels. The dilated portion showed simply dense connective tissue, with some round-celled infiltration. No evidence of pregnancy was found anywhere in the specimen.

The impression on first examination was that it was an example of a small cyst of the broad ligament, but on closer investigation the parovarium was seen distinctly separate. The hydatid of Morgagni, and the folds in the cyst interior, point to the outer portion of the Fallopian tube as being the origin of the condition. The patient's symptoms date from the last labour; it was probably then that torsion took place. There was no evidence of the cyst having had its origin in an accessory tube.

R. Hamilton Bell.

On the "Reflexa" in Tubal Pregnancy.

Leopold. *Zentral. für Gynäkol.*, 1904, No. 17.

On the existence and structure of the extra-uterine reflexa there have of late appeared many investigations which argue partly for, or partly against, a reflexa-formation in extra-uterine pregnancy. Leopold has met with several cases suitable for studying this question, and the researches have been carried out by his assistant Voigt. The preparations show the ovum invested by narrow or wide strands of tissue of various lengths, giving the impression that the ovum had embedded itself like a gem in a ring. Leopold describes the surrounding tubal mucosa as somewhat overgrown and as overlying the ovum like an inflated sail, but leaving one side of it uncovered. He thinks that the ovum has embedded itself under a

large plica in the lumen of the tube. In section, however, he admits the presence of tongues of muscle and decidual cells in the capsularis which invests the ovum. In addition to this the entire ovum except the upper pole, is covered with a cubical epithelium similar to that lining the lumen of the tube. In our opinion the naked eye appearances are easily misleading, and without microscopical examination it would be impossible even in an early case, soon after embedding had occurred to demonstrate the true relationship between the ovum and the tube wall. The fact that the columnar epithelium was wanting over the most prominent pole of Leopold's ovum is no argument against intra-mural embedding; many accidents before or during the preparation of the section would account for its absence.

CUTHBERT LOCKYER.

A Case of Chorioepithelioma following Tubal Pregnancy.

HINZ (G.). *Zeits. für Geburts. und Gynäkol.*, 1904. Band lii., Heft 1.

VERY few cases of chorio-epithelioma following tubal pregnancy have been reported.

A woman of 33, who had had three children and two miscarriages, complained of slight pains in the abdomen five weeks after her last menstrual period. The next day she fainted, and had more severe pain with bleeding. She was examined ten days later and right-sided tubal abortion was diagnosed. The right tube, containing an ovum as large as a walnut, was removed. On microscopical examination the chorionic villi showed no abnormal appearances. She left the hospital on the 18th day after the operation; three weeks later she began to complain again of bleeding with pain in the right side of the lower abdomen. She was examined a fortnight later, when the uterus was found to be enlarged, and to have a rounded tumour the size of a small fist attached to its right cornu. This was thought to be another extra-uterine pregnancy, in the stump of the right tube. The abdomen was opened and the tumour removed together with a swelling the size of a walnut which arose from the right cornu of the uterus. A few days later there were pain and vomiting, then collapse with sudden severe pain in the region of the gall-bladder, followed by jaundice, rapid loss of strength, great increase in size of the liver, evidence of free fluid in the abdomen and meteorism. Death occurred about seven weeks after the second operation. The lungs, liver and abdominal and pelvic cavities contained masses of tissue which resembled blood-cloot. Microscopically these masses were found to consist of typical chorio-epithelioma.

HENRY RUSSELL ANDREWS.

Causes and Treatment of Prolapse.

G. Winter (Königsberg). *Graefe's Sammlung.* Vol. v., 8. Halle, 1904.

At the present time, the author says, prolapse, that is of puerperal origin, is almost always avoidable, and if it has occurred is easily curable. As to the causation, he finds that of 243 cases collected by one of his students, Götz, only $2\frac{1}{2}$ per cent. were nulliparæ. The first confinement is the most dangerous as a cause of prolapse. Pregnancy, child-birth, and the lying-in time all work together as predisposing and exciting causes. For during pregnancy tissues are relaxed and the fat of the parametrium is for the most part absorbed. Labour adds other causes by the forcible stretching of the parts or by their tearing; more especially is this the case if the labour is hurried by undue pressing or by too rapid forceps delivery. When traction is made with forceps before complete dilatation of the os uteri the cervix is often drawn down to the vulva. Even without visible rupture of the perineum we may find submucous tearing of the levator ani and ligamentous structures at the sides of the vagina. The puerperium also adds its quota of causes. Inflammatory disturbances hinder the proper progress of involution: prolonged nursing causes weakness. Injury, such as strains, etc., is usually only the exciting cause and would not take effect unless the parts were already weakened.

The author's conclusions are that too rapid stretching of the vagina, by too early pressing or pulling, is to be avoided.

All injuries of the vagina and perineum are to be immediately and carefully repaired. The puerpera must lie in bed for 12—14 days and must avoid all hard work for a period of at least six weeks. At the end of the puerperium any woman with the least symptoms of prolapse must be carefully examined. Young women must have the beginnings of prolapse carefully treated—prolapse of the vaginal walls by colporrhaphy, and if there be tendency to retroversion, by suitable pessaries; ring pessaries are to be avoided in young women. Higher degrees of prolapse must be operated on; treatment by pessaries must be undertaken only when there are special indications against operation. Among the operations recommended is vaginal fixation in patients who are not likely to become pregnant again; for younger women he operates on the round ligaments by the Alexander Adams operation as one not giving rise to trouble in pregnancy, but it cannot be counted on to prevent retroflexion.

Ventrofixation should be accompanied by colporrhaphy. Total extirpation of the uterus and vagina he has done twice and gives warning that if any part of the relaxed vaginal tissue is left it will again prolapse. The operation is not without danger and has serious drawbacks (absence of vagina, etc.), and he has performed it only in cases of prolapse with cancer.

E. H. Lawrence Oliphant.

Uterus Didelphus.

Lorrain and Billon. *Bulletin et Mém. de la Soc. Anat. de Paris*, March, 1904.

The specimen was removed from a woman of 32, who had had a normal confinement seven years before. The entire uterus and appendages of both sides were taken away by abdominal hysterectomy and submitted to a careful histological examination. The right appendages showed little noteworthy; the tube communicated with the right uterine cavity, which was normal. The left uterus had the appearance of pedunculated subperitoneal fibroid attached to the left side of the normal uterus. At its upper extremity was attached the left Fallopian tube; on section a little thick reddish fluid escaped, and a canal was found lined with uterine mucosa and continuous with that of the left tube. There was no communication with the main uterine canal, the two being separated by a layer of muscular tissue of 5cm. in thickness. The left tube was distended into a hæmato-salpinx and the ovary contained a large hæmorrhagic cyst.

J. S. Fairbairn.

On Congenital and Acquired Atresiæ of the Female Genitalia and their Treatment.

Hofmeier (M.). *Zeits. für Geburts. und Gynäkol.*, 1904. Band lii., Heft 1.

Hofmeier agrees with Nagel, Meyer and Veit that in a certain number of the so-called congenital cases, the atresia results from changes which take place after birth, while in other cases inflammation during intra-uterine life brings about adhesions between the vaginal walls. He describes a case which he considers to be a proof that even in cases of apparently congenital atresia with partial doubling of the genital organs severe inflammatory processes must have occurred earlier in the appendages of the affected side.

The patient was 22 years old, 0-para. Since the age of 16 she had menstruated irregularly, at long intervals. She complained of increasing pain in the left side. Examination showed that the uterus, which was of normal size, was pushed over to the right by a hard tumour of irregular outline, $1\frac{1}{2}$ times the size of a fist, closely attached to the left cornu. Laparotomy was performed, and the tumour was found to be a tubo-ovarian swelling containing a large quantity of old blood, and intimately adherent to surrounding structures. A year and a half later another operation was performed, and a swelling in the same situation was found to be a hæmatometra on the left side, while the right half of the uterus was pregnant.

In another case a patient had had amenorrhœa since her first confinement $2\frac{1}{2}$ years ago, which had been followed by a five weeks' illness with pyrexia. For the last six months there had been pains of increasing severity recurring every four weeks. The body of the uterus was somewhat enlarged and the upper part of the cervical canal was found to be absolutely closed. The anterior fornix was opened, the bladder separated from the uterus, and the cervix split longitudinally. A small quantity of thick black blood escaped from the uterine cavity. As it seemed impossible to keep the cervical canal patent the opening into the uterine cavity was stitched to the edge of the opening in the vaginal wall. The patient menstruated regularly and painlessly afterwards.

A woman of 22, who had never menstruated or had any pain suggestive of attempts at menstruation, was siezed with severe cramp-like pain in the left side. She was found to have a so-called uterus duplex separatus or uterus bilocularis, the closed half of which had menstruated while the half with the patent cervix had not. The same operation as in the preceding case was performed with the result that the patient menstruated regularly.

A patient of 19, who had never menstruated, was found to have complete atresia of the vagina except for half an inch at the lower end, with hæmatometra. The tubes and ovaries were normal. A combined abdominal and vaginal operation was performed and the cervix stitched to the rudimentary vagina, after the tissues between them had been bored through by the finger. The patient menstruated normally twice in the next four months.

Hofmeier describes four more cases of hæmatometra due to atresia of the cervix or vagina. In none of these cases was there hæmatosalpinx. "It is very striking that in all these cases of atresia due to infection, the tubes were unaffected, while according to the theory of Nagel and Veit there should have been hæmatosalpinx. It is

extremely improbable that blood had flowed out through the ostium abdominale." Hofmeier thinks that the danger of rupture of a hæmatosalpinx occurring if these cases of atresia are attacked from below has been much exaggerated. HENRY RUSSELL ANDREWS.

The Ætiology of Prolapse of the Female Urethra.

KLEINWÄCHTER (LUDWIG). *Zeits. für Geburts. und Gynäkol.*, 1904. Band lii., Heft 1.

SIPILA has recorded six cases in which the condition was really one of a neoplasm, an angioma, rather than a prolapse. Rüge and Simpson have recorded similar cases. Kleinwächter records an example of quite another ætiology. In this case the prolapse of the urethral mucous membrane was due to widening of the urethral orifice by attempts at coitus with great tenderness of the vaginal orifice. Dorffmeister and Pinkus have described cases in which prolapse was due to the same cause. HENRY RUSSELL ANDREWS.

The Ætiology of Kraurosis Vulvæ.

JUNG (PH.). *Zeits. für Geburts. und Gynäkol.*, 1904. Band lii., Heft 1.

THE author examined pieces of skin taken from the vulvæ of patients in whom there were no symptoms and no naked-eye changes pointing to any disease of the vulva. He found, except for some minor details, the changes which have been considered characteristic of kraurosis, viz., sclerosis and œdema of the corium, disappearance of the papillæ, small-celled infiltration of the deeper layers of the connective-tissue of the corium, degeneration of the elastic fibres in the neighbourhood of the sclerosed parts of the corium, and atrophy of the rete malpighii and the stratum corneum. He concludes that the difference between a well-marked kraurosis and a chronic vulvitis is only one of degree, not of kind. Kraurosis is only the final stage of a chronic vulvitis and can no longer be looked on as a clinical entity.

HENRY RUSSELL ANDREWS.

New Technique in the Treatment of Cervical Catarrh.

SANITER. *Münch. med. Wchnschr.*, July 12th, 1904.

IN this paper the author advocates care in the sterilisation of the Playfair probe covered with wool, as frequently used in applications to the cervix and body of the uterus. Usually the probe is covered with wool by the non-disinfected hands—very often of an assistant—and in the process the bacteria from the fingers are well rubbed in. During the course of hospital work gonorrhœal and pus organisms

may be transferred in this way from the fingers to the wool; since as many as three to six applications of plain wool are frequently necessary to remove the mucus and discharge and to prepare a clean surface for the action of the caustic employed, the danger of spreading disease is by no means as trifling as might be thought. To secure an absolute asepsis in this work the author has discarded cotton wool for asbestos, which can be sterilised in a flame. It is easily wound on the probe, it will absorb nearly as well as wool, and it is quite unaffected by chemical reagents. It is made absolutely germ-free by holding it for three seconds in a Bunsen flame or five to six seconds over a spirit lamp. As it is also important that the fingers should not be contaminated with gonococci or septic mucus and pus during the removal of plugs from the end of the probe, a small groove is constructed on its convex surface, so that the wool or asbestos can be easily removed by simply running a pair of scissors along it. Saniter further suggests that this use of asbestos may be widely extended; in ear, nose, throat, dental or urethral work it must have many advantages, and he wonders why it has not been more generally adopted. It is cheap, and its ease of sterilisation under any circumstances—in hospital or private work—is a great point in its favour.

J. S. Fairbairn.

A New Skin Suture without Thread after Laparotomy.

Tsaconas (Socrate S.). *Archives Internationales de Chirurgie*, 1904. Vol. i., p. 5.

For the last year the author has closed the skin part of his abdominal wounds with a pin, leaving it in position for nine days. It is much more quickly applied than any form of suture and avoids all risks of septic infection. The author has used this method in one hundred cases, and is quite satisfied with the results. The needle used is of steel and is gilt; it is 12 centimetres long and 2 millimetres in diameter; it is cylindrical with a lance point and has a glass head. There is a diagram given showing the method of application. The needle is passed through both edges at one end of the wound obliquely, then back again obliquely, re-entering on the side of exit, and so on till the whole length of the incision has been caught by the needle. The sutured wound is at first of a zigzag shape, but by the 12th day is quite straight. If the wound is a long one two needles may be used, entering from opposite ends of the wound. We may add that this method of closing wounds has occasionally been used in Glasgow during the last few years.

E. H. Lawrence Oliphant.

REPORTS OF SOCIETIES.

OBSTETRICAL SOCIETY OF LONDON.

Meeting, Wednesday, July 6th, 1904, EDWARD MALINS, M.D., F.R.C.P., *President, in the Chair.*

Dr. LEWERS showed a specimen of *Fibroids and Carcinoma* of the body of the uterus removed by pan-hysterectomy from a patient, 45 years of age. A lump had been noticed in the abdomen for six years. For two years there had been a constant vaginal discharge, but no severe loss. Pain in the lower abdomen had been quite a recent symptom. On vaginal examination a blood-stained offensive discharge was seen issuing from the os uteri. The vaginal portion was normal. The sound passed eight inches. At the operation the body was removed with the intention of leaving the cervix. But on cutting through the cervix at the level of the internal os, malignant growth (which had not previously been suspected) was found in the lumen. The cervix was consequently removed. Dr. Lewers urged the advisability of opening up the body of the uterus immediately after removal in all cases where fibroids existed, for, in his experience, malignant growth in the endometrium is not very rarely a complication of uterine fibroids.

Dr. HERBERT SPENCER preferred total hysterectomy to amputation for fibroids, both on account of the possibility of malignant disease, and also on account of the difficulty in some cases of distinguishing between fibroids and cancer at the time of operation. To perform the operation in two stages by cutting through the cancerous uterus at the level of the internal os entailed greater risk of local implantation of cancer than if the uterus were removed entire.

Dr. AMAND ROUTH did not consider that cancer was relatively so frequent in fibroid uteri as in cases where no fibroids were present. He regarded metrorrhagia after the menopause in a woman known to have had a fibroid as strong presumptive evidence of cancer having developed. In such cases he advocated pan-hysterectomy.

Dr. GALABIN thought that fibroids predisposed to cancer and that in all cases of fibroids in which continuous or irregular hæmorrhage could not otherwise be cured in a moderate time, the uterus ought to be removed. Though he agreed with Dr. Spencer in regarding pan-hysterectomy as involving no greater risk than supra-vaginal hysterectomy, he did not advocate pan-hysterectomy in all cases. He reserved that operation as a rule for parous women if the cervix were lacerated or inflamed or showed œdematous hypertrophy or any other lesion. In single or nulliparous women he thought that if supra-vaginal hysterectomy were performed there was no appreciable risk that the cervix, if healthy at the time of operation would afterwards become affected by cancer.

Mrs. SCHARLIEB regarded pan-hysterectomy for fibroids as the best operation both for immediate and for remote results.

Dr. LEWERS, in reply, said that he thought it best in operating for fibroids to leave the cervix, if healthy at the time of operation. He

considered that by unintentionally leaving also a small portion of the mucous membrane of the body of the uterus the patient had slight monthly losses and suffered much less, or not at all, from the disturbances incidental to the production of an artificial menopause.

Dr. PURSLOW showed two specimens—CYSTIC TUMOUR OF UTERUS AND TUBAL MOLE, which were referred to the Pathological Committee.

Dr. A. W. SIKES showed three skullcaps of children illustrating VARIATIONS OF THE POSTERIOR FONTANELLE.

Dr. BOXALL remarked on the frequency with which deviations from the normal type of posterior fontanelle occurred.

Dr. WALTER TATE showed a specimen of FIBROMYOMA ASSOCIATED WITH CYSTIC DISEASE OF THE SAME OVARY removed by operation from a patient 71 years of age. For two years there had been pain and progressive enlargement of the abdomen and occasional vaginal hæmorrhage. The tumour consisted of two distinct parts; a solid portion the size of a fœtal head which appeared to grow in the wall of the cystic tumour, and a cystic portion, the wall of which was inflamed and lined by lymph. The solid portion proved to be a fibromyoma with necrotic changes towards the centre.

Mr. ALBAN DORAN referred to a similar case which he had published.

Mr. ALBAN DORAN and Dr. H. WILLIAMSON showed a specimen of NECROBIOTIC UTERUS ASSOCIATED WITH RECENT PREGNANCY removed 4—5 weeks after delivery from a patient aged 38. An exploratory operation was made during pregnancy, but when the abdominal wall was cut through down to the peritoneum, the movements of the child were so evident all over the abdomen that it was decided to close the wound as there was nothing about the situation of the tumour to interfere with labour at full time. The patient had a perfectly normal labour. Three weeks afterwards the patient got up and in the night had a violent attack of pain referred to the epigastrium. The symptoms simulated those associated with axial rotation of an ovarian cyst. The pain subsided after resting, but the swelling continued tender with some elevation of temperature. The uterus was amputated a little above the cervix. The tumour proved to be a fibroid situated in the anterior wall of the body of the uterus. On section the surface was red and fleshy-looking and the consistence soft and jelly-like.

Dr. AMAND ROUTH alluded to a case of necrobiotic change in a fibroid due to axial rotation of its pedicle at the fifth month of pregnancy. Rapid enlargement took place. The symptoms were acute and consisted of shock, severe pain and vomiting. The fibroid was removed and the patient recovered without disturbance of the pregnancy.

Mr. BUTLER-SMYTHE referred to the difficulties attending the diagnosis of the conditions present in Mr. Doran's case both during pregnancy and also before the second operation.

Dr. FAIRBAIRN remarked that, though pregnancy appears to have some influence in the causation of necrobiotic changes, it cannot be the only factor, for it sometimes occurs in patients who have never been pregnant. And that it is not due to labour and to changes during the puerperium is shown by its frequent occurrence early in pregnancy.

Mr. DORAN, in reply, remarked that he had operated on many cases where there had beeen no pregnancy. Two of the patients were neurotic spinsters, one of whom had been laid up for nearly twenty years after a railway accident.

Dr. Frank E. Taylor showed a specimen of Fibroma of the Ovary removed by Mr. Bland-Sutton from a sterile married woman aged 50, who complained of severe dyspareunia of many years duration. The right ovary showed no sign of diesease. The tumour sprang from the outer pole of the left ovary. It was more or less pedunculated, densely hard and lobulated, with a smooth and glistening white surface. It measured $2\frac{1}{8}$ by $1\frac{3}{4}$ inches and weighed $2\frac{1}{2}$ ozs.

Dr. Fairbairn agreed that this was probably an example of the rarest form of ovarian fibroma, springing from the tunica albuginea and not from the ovarian stroma.

The specimen was referred to the Pathological Committee.

A paper was then read upon Sacs Containing Fœtuses and Lying Free in the Peritoneal Cavity of a Rabbit,* by M. S. Pembrey and G. Bellingham Smith.

Dr. Amand Routh remarked that no such cases were observed in women, because if the uterus ruptured at or near full term, the fœtus escaped through the rent without its membranes. He was surprised, however, that these changes had not been observed in some of the cases of tubal abortion where the entire ovum escaped into the peritoneal cavity. The only cases he knew of, where such fibrinous covering was seen, were in cases of entirely detached sub-peritoneal fibroids, and where pseudo-cyst walls were developed round secondary abdominal gestations.

Dr. Robert Boxall recorded a case of Acute Inversion of the Uterus: Spontaneous Reposition† in which complete inversion followed traction on the cord after a normal delivery in a young primipara.

Dr. Galabin said that he had not invariably found it necessary to wait for involution of the uterus in all cases in which attempts at reposition were unattended with success in the acute stage. He had found it quite practicable to restore the uterus with Aveling's repositor about a week after delivery in a case where there was a good deal of sanguineous discharge continuing. But for this purpose, as the uterus was still large he had a special cup constructed. Reduction was completed within 48 hours.

Dr. Herbert Spencer had seen a similar case of spontaneous replacement of an inverted uterus. Others had been recorded, although its possibility had been denied by some. He was generally in agreement with Dr. Boxall's remarks. If a recently inverted uterus could not be replaced, he thought it better to wait for two or three weeks, and he considered it especially bad practice to endeavour to replace the uterus while its mucous membrane was in a septic condition. In his own case a midwife had left the uterus inverted with a large piece of placenta and membranes attached for three weeks. He removed the putrid placenta and membranes and employed continuous irrigation with boric acid solution. Under this treatment, the fundus gradually receded and in a few days passed within the cervix, and finally was completely reduced under the influence of the irrigation only. He thought it possible that the gentle continuous pressure of a stream of water would reduce a chronic inversion. A suggestion had been put forward that in cases of *sudden* reduction a violent effort forcing down the vagina and its attachments to the cervix, might reduce the inversion by causing the round and other ligaments to pull up the fundus. He considered that successful treatment by Aveling's repositor depended largely on an accurately fitting cup and upon a stem with a proper curve.

* *Vide* p. 203. † *Vide* p. 209.

Dr. BOXALL, in reply, said that he was so much impressed with the necessity of using an accurately fitting cup that in two cases he had first made a mould of the inverted fundus, using for that purpose a bar of hard soap. From that model a cup was shaped out of pitch pine. When applied this accurately fitting cup adhered by suction to the inverted fundus and was thus prevented from slipping. Being made of soft wood, the cup was much more easily removed from the uterus after reinversion was effected, because it could be seized and, if necessary, broken up by forceps with greater ease than a cup made of ebony or vulcanite. In one case he had seen much damage done by Aveling's repositor in attempting reduction a fortnight after delivery, the patient nearly losing her life from hæmorrhage following the attempt. For that reason he preferred to wait till involution was well advanced.

REVIEWS OF RECENT BOOKS.

DIE FRUCHTABTREIBUNG DURCH GIFTE UND ANDERE MITTEL. Ein Handbuch für Aertze und Juristen. Von Prof. Dr. L. Lewin. Zweite umgearbeitete und vermehrte Auflage. S. 375. Berlin: August Hirschwald, 1904.

In this book "criminal" abortion is considered from the point of view of the philosopher, the physician, and the jurist. The author shows that criminal abortion was as common in ancient times as it is now, civilisation and "culture" are not alone responsible for it. Among all the ancient races except the Jews criminal abortion was practised. This exception was possibly due to the command "Be fruitful and multiply." Later on, when the Jews came under the influence of the Greeks and Romans they followed their example, and criminal abortion became common among the Jews as well. The author considers that the degeneration of Greece and Rome was partly due to excess of prostitution and frequency of criminal abortion. He then discusses criminal abortion in the present day. In America many medical men act as abortionists, and some of the clergy even allow their wives to have abortion induced. He thinks things are not much better in England, although large numbers of English ladies find it more convenient to run over to Paris to have abortion brought on in the well-organised lying-in institutions to be found there where they have the best of medical care. In Persia it is carried out in the most open manner, every illegitimate pregnancy being brought to an untimely end. In Turkey the great frequency of the practice is slowly ruining one of the healthiest and finest races of mankind. Among the most primitive races it is very common. In Ceylon it used to be the rule that no woman under the age of 36 was allowed to let pregnancy go to full term. The author gives a short account of the law on the subject in ancient and modern times in all civilised countries. The last 140 pages are given up to a description of the various methods in use, with an explanation of the effects of the various poisons, with many illustrative cases. The author considers that the best remedy would be the provision of lying-in institutions where the utmost secrecy would be employed. He does not mention that such already exists in Vienna. Any pregnant woman can come from any part of Austria and be admitted into the Allgemeines Krankenhaus anonymously, her name and address being given up in a sealed envelope which is not opened unless she dies. The paternal Government goes still further and provides for the child if the mother does not wish to look after it herself. The book is written in a scholarly and interesting style, and can be thoroughly recommended to those who are interested in the subject.

ZUR LEHRE VON DER BLUTGEFÄSSE DER NORMALEN UND KRANKEN GEBÄRMUTTER ("On the Blood-vessels of the Uterus in Health and Disease.") By R. Freund, Privat-docent at the University of Halle. Pp. 84; 26 coloured drawings. Jena: Gustav Fischer, 1904. Price 18 marks.

This monograph describes in detail the results of injection of the blood vessels in 34 uteri, mostly obtained fresh by operation, a few being obtained from *post-mortem* examinations. These uteri were of various ages, eight being fœtal or new-born, two in the first year, one from a girl previous to menstruation and 23 from adults. The method of injection is described in detail, the greatest care apparently being necessary to prevent bursting of blood-vessels under the injection pressure, and diffusion of the injection mass into the tissue. Berlin blue in the form of a paste and ammonia

carmine in thin gelatine were the injection masses used, the former for veins, the latter for arteries, in all cases a double injection being made. After injection the specimens were placed in ice for a time and then hardened and sections cut and mounted, stained or unstained as was deemed necessary. From specimens thus prepared the author describes in great detail the arteries, veins and capillaries in fœtal, newly-born and adult uteri. In the same way considerable light is thrown on the condition of the vascular system of the menstruating uterus, as the author was fortunate enough to obtain a specimen on the second day of menstruation, excessive dilatation of the sub-epithelial capillaries being well shown in this case. In several specimens of uteri containing fibro-myomata of various sizes the author well describes the arrangement of the blood-vessels going to the tumours, but his researches throw no particular light on the origin or fibro-myoma. The final chapters are devoted to the changes in the circulation after the climacteric, and to the schematic description of the normal uterine circulation. Although this most painstaking research cannot be said to be of general interest, still it is only by patient laborious work of this kind that knowledge can be advanced, and the author is to be most heartily congratulated on the results of his work. The coloured plates are beautifully executed and illustrate in a most excellent way the author's text. ———

INTRODUCTION A L'ETUDE CLINIQUE ET À LA PRATIQUE DES ACCOUCHEMENTS. ("Introduction to the Clinical Study and Practice of Accouchements.") By Faraboeuf and Varnier. Pp. 477; 362 figures. New and revised edition. Paris: Steinheil, 1904. Price 15 francs.

The demand for this work has necessitated a new edition, the present volume, which has been revised by Professor Faraboeuf since the lamented death of Henri Varnier. Many years of experience, in verifying by experiment the views expressed in the former volume necessitated several changes in the work. The experiments in connection with the movements of the fœtus as it passes through the pelvic canal were carried out on cadavers embalmed and preserved in glycerine, thus rendering them sufficiently supple to carry out the various manœuvres. Further the results of these experiments have been verified by Professor Faraboeuf and also by Professor Pinard by careful observations of actual labours in living persons. The student of obstetrics cannot fail to obtain a clear and concise idea of the mechanism of labour, if he carefully reads these pages and studies the drawings. These drawings have all been made from actual experiments, and are repeated again and again in the text so that the student has no troublesome references to previous diagrams to make. In addition to the anatomy of the female pelvis and fœtal head, the presentations, the mechanism of labours in each and the methods of diagnosis, the authors deal in a most exhaustive manner with the operations of version and forceps, 182 figures alone being devoted to these two parts of the subject. In no other book on the subject which we have met is the operation of version or application of forceps so thoroughly described and illustrated as it is in this. The teaching of practical obstetrics is perhaps one of the most difficult, if not the most difficult, branch of medical education, but the importance of it is well recognised by our Continental neighbours. It was the recognition of this fact which originally spurred on the authors of this work to spend the enormous amount of time necessary for the carrying out of experiments and the preparation of drawings. We can but express our admiration of the result which is fully worthy of the time and labour spent upon it.